

PBS 3425-13

Child Care Center Design Guide



**U.S. General Services Administration
Public Buildings Service
Child Care Center of Expertise**

ACKNOWLEDGEMENTS

The GSA Child Care Center Design Guide contains information obtained from the sources below. However, general concepts, theories, and empirical information obtained from those sources have not been specifically footnoted. The GSA appreciates the use of these valuable resources which provided a strong starting point for the GSA in its effort to establish national standards for child care facilities. The sources are listed alphabetically. In addition, the cover photography is by William Fitzpatrick Photography, Inc.

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Table of Contents

CHAPTER 1:

INTRODUCTION TO THE GUIDE	1-1
1.1 Purpose of the Guide	1-1
1.2 Users of the Guide	1-2
1.3 Applicable Documents	1-2
1.4 Organization of the Guide	1-4
1.5 Glossary of Terms	1-6

CHAPTER 2:

MISSION, GOALS, ADMINISTRATION, AND POLICY	2 - 1
2.1 Program Goals and Objectives	2 - 1
2.2 Process	2 - 2
2.3 Standards	2 - 3
2.4 Authority of the GSA	2 - 4
2.5 Center Management	2 - 5
2.6 GSA Policy for Allocating Costs	2 - 5

CHAPTER 3:

ADULTS AND CHILDREN IN THE CENTER	3 - 1
3.1 Adults	3 - 1
3.1.1 Parents	3 - 1
3.2 Staff	3 - 2
3.2.1 Teachers	3 - 2
3.2.2 Administrators	3 - 3
3.2.3 Service Personnel	3 - 4
3.3 Children	3 - 4
3.3.1 Infants:	3 - 5
3.3.2 Young Toddlers:	3 - 7
3.3.3 OlderToddlers	3 - 7
3.3.4 Pre-School Children	3 - 8
3.3.5 Kindergarten	3 - 9
3.3.6 School-Age Children	3 - 9
3.4 Anthropometric Information	3 - 11

CHAPTER 4:

NAEYC AND OTHER STANDARDS	4 - 1
4.1 NAEYC Program Criteria	4 - 1
4.1.1 Interactions among Staff and Children	4 - 1
4.1.2 Curriculum	4 - 2
4.1.3 Staff-Parent Interaction	4 - 2
4.1.4 Staff Qualifications and Development	4 - 2

4.1.5	Administration	4 - 3
4.1.6	Staffing	4 - 3
4.1.7	Physical Environment	4 - 3
4.1.8	Health and Safety	4 - 3
4.1.9	Nutrition and Food Service	4 - 4
4.1.10	Evaluation	4 - 4
4.2	Group Size and Staff-Child Ratio	4 - 4
4.3	Additional Requirements	4 - 6

CHAPTER 5:

PLANNING FOR

SPACE AND LOCATION	5 - 1
5.1 Criteria for Center Location	5 - 1
5.2 GSA Child Care Center Enrollment Capacity	5 - 1
5.3 Space Measurement Terms	5 - 2
5.4 Overall Space Requirements	5 - 3
5.4.1 Interior	5 - 3
5.4.2 Exterior	5 - 3
5.5 Environmental Quality	5 - 3
5.5.1 Interior	5 - 3
5.6 Health and Safety	5 - 4
5.7 Security	5 - 5
5.8 Approach and Access	5 - 6
5.9 Historic Preservation	5 - 7
5.10 Space Types	5 - 7
5.11 Children's Spaces	5 - 7
5.11.1 Classrooms	5 - 7
5.11.2 Common Spaces	5 - 7
5.11.3 Play Yards	5 - 7
5.12 Adult Spaces	5 - 8
5.12.1 Parent Spaces	5 - 8
5.12.2 Staff Spaces	5 - 8
5.12.3 Service Spaces	5 - 8
5.12.4 Circulation	5 - 8
5.13 Example Space Programs	5 - 8

CHAPTER 6:

SITE DESIGN	6 - 1
6.1 Concepts for Site Design	6 - 1
6.1.1 Context	6 - 1
6.2 Entry & Circulation	6 - 1
6.2.1 Entry Approach	6 - 1
6.2.2 Parking	6 - 2
6.2.3 Service	6 - 3
6.2.4 Security	6 - 3
6.3 Concepts for Play Yard Design	6 - 3

6.4	General Design Concept	6 - 4
6.4.1	Location	6 - 4
6.4.2	Separation	6 - 4
6.4.3	Transitions	6 - 5
6.4.4	Porches	6 - 5
6.4.5	Shade	6 - 5
6.4.6	Circulation	6 - 5
6.4.7	Site Furniture	6 - 5
6.4.8	Storage	6 - 6
6.5	Types of Outdoor Play Areas	6 - 6
6.5.1	Sand and Water Play	6 - 6
6.5.2	Dramatic Play	6 - 6
6.5.3	Large Motor Play	6 - 6
6.6	Play Yards for Different Age Groups	6 - 7
6.6.1	Infant Outdoor Play Areas	6 - 7
6.6.2	Toddler Outdoor Play Areas	6 - 9
6.6.3	Pre-School Outdoor Play Areas	6 - 9
6.6.4	School-Age Outdoor Play Areas	6 - 9
6.7	Specific Site Technical Criteria	6 - 10
6.7.1	Fences and Enclosures	6 - 10
6.7.2	Plant Materials	6 - 11
6.7.3	Dimensions and Clearances	6 - 12
6.7.4	Shading	6 - 12
6.7.5	Play Yard Surfaces	6 - 13
6.7.6	Resilient Surfaces	6 - 13
6.7.7	Hard Surfaces	6 - 14
6.7.8	Grass/Turf Surfaces	6 - 14

CHAPTER 7:

INTERIOR SPACE DESIGN	7 - 1
7.1 General Information	7 - 1
7.1.1 Entry and Circulation:	7 - 1
7.1.2 Staff Areas	7 - 1
7.1.3 Classrooms	7 - 1
7.1.4 Common Areas	7 - 1
7.1.5 Service Spaces	7 - 2
7.1.6 Entrance and Circulation	7 - 2
7.1.7 Exterior Transition Spaces	7 - 2
7.1.8 Vestibule	7 - 3
7.1.9 Reception	7 - 3
7.1.10 Main Circulation	7 - 4
7.1.11 Staff Spaces	7 - 5
7.1.12 Director's Office	7 - 5
7.1.13 Parent/Teacher Conference Room	7 - 6
7.1.14 Staff Lounge	7 - 6
7.1.15 Staff Toilet	7 - 6

7.1.16	Central Resource Storage	7 - 7
7.2	General Concepts for Classroom Design	7 - 7
7.2.1	Classroom Areas	7 - 7
7.2.2	The Classroom Location	7 - 11
7.2.3	Classroom Size	7 - 11
7.2.4	Separation of Spaces	7 - 11
7.3	Scale	7 - 12
7.4	Architectural Form	7 - 12
7.5	Component Areas of Classrooms	7 - 15
7.5.1	Classroom Entrance Areas	7 - 15
7.5.2	Cubby Storage Area	7 - 15
7.5.3	Infant and Young toddler Cubbies	7 - 15
7.5.4	Older Toddler and Pre-School Cubbies	7 - 16
7.5.5	School-Age Lockers	7 - 16
7.5.6	Open Activity Area	7 - 16
7.5.7	Activity Area for Infants	7 - 18
7.5.8	Activity Area For Toddlers	7 - 19
7.5.9	Activity Area For Pre-School Children	7 - 19
7.6	Lofts/Platforms	7 - 20
7.6.1	Infant Lofts and Platforms	7 - 20
7.6.2	Toddler and Pre-School Lofts and Platforms	7 - 21
7.6.3	Art Sink	7 - 22
7.6.4	Toilets and Sink	7 - 22
7.6.5	Diapering Station and Storage Areas	7 - 24
7.6.6	Sleeping and Napping Areas	7 - 26
7.6.7	Nursing and Lactation Area	7 - 27
7.6.8	Food Preparation	7 - 27
7.6.9	Eating/Table Area	7 - 28
7.6.10	Child-Accessible Display	7 - 28
7.6.11	Classroom and Teacher Storage	7 - 29
7.6.12	Teacher Storage:	7 - 29
7.6.13	Multiple-Purpose and Large-Motor-Activity Spaces	7 - 30
7.6.14	Sick Bay	7 - 30
7.6.15	Service Spaces	7 - 31
7.6.16	Kitchen	7 - 31
7.6.17	Laundry	7 - 32
7.6.18	Janitor's Closet	7 - 33
7.6.19	Service Entrance	7 - 33
7.7	Mechanical/Electrical/Telephone Equipment	7 - 33
7.8	Design Features to Avoid	7 - 34

CHAPTER 8:

FURNISHINGS AND EQUIPMENT	8 - 1
8.1 General Criteria	8 - 1
8.1.1 Storage	8 - 2
8.1.2 Flammability Codes and Standards	8 - 3

8.1.3	Upholstered Furniture	8 - 3
8.1.4	Chemicals	8 - 3
8.1.5	Safety	8 - 3
8.1.6	Storage Units	8 - 3
8.1.7	Seating	8 - 4
8.1.8	Tables and Chairs	8 - 4
8.1.9	Countertops	8 - 4
8.2	Playground Equipment	8 - 4
8.3	Furniture and Equipment List	8 - 5

CHAPTER 9:

INTERIOR FINISHES	9 - 1
9.1 General Requirements	9 - 1
9.2 Color and Texture	9 - 2
9.2.1 Use of Color	9 - 2
9.2.2 Use of Texture	9 - 3
9.3 Types of Finish Materials	9 - 3
9.3.1 Wall Finishes	9 - 3
9.3.2 Floor Finishes	9 - 4
9.4 Ceilings	9 - 5
9.5 Finish Schedule	9 - 5

CHAPTER 10:

TECHNICAL CRITERIA	10 - 1
10.1 Safety	10 - 1
10.2 Security	10 - 3
10.2.1 Security Influences on Design	10 - 4
10.3 Sustainable Design	10 - 5
10.4 Accessibility	10 - 5
10.4.2 Access to Outdoor Play Yards	10 - 5
10.5 Historic Preservation	10 - 5
10.6 Acoustics	10 - 6
10.6.1 Control of Exterior Noise	10 - 6
10.6.2 Modulating Interior Noise Generated Within the Space	10 - 7
10.6.3 Controlling the Transfer of Noise Within Space	10 - 7
10.6.4 Controlling the Transfer of Sound to Adjoining Spaces Outside Center	10 - 7
10.7 Windows, Doors, and Hardware	10 - 8
10.7.1 Windows	10 - 8
10.7.2 Standards for Safety Glass	10 - 9
10.7.3 Doors	10 - 9
10.7.4 Hardware	10 - 10
10.8 Plumbing	10 - 10
10.9 Heating/Ventilation/Air Conditioning	10 - 12
10.9.1 Temperature and Humidity Levels	10 - 12
10.9.2 Ventilation Equipment	10 - 12

Table of Contents

10.9.3	Safety Issues	10 - 12
10.10	Lighting.....	10 - 13
10.11	Electrical	10 - 15
10.11.1	Safety Issues	10 - 15
10.11.2	Requirements	10 - 15

CHAPTER 1: INTRODUCTION TO THE GUIDE

This chapter describes the purpose of the Guide, its organization, the intended audience, how the information should be applied, and other documents that must be referenced. It also contains a glossary of terms used throughout the Guide.

1.1 Purpose of the Guide

The Federal Child Care Center Design Guide (hereinafter referred to as the Guide) contains criteria for planning and designing child care centers in GSA-owned or controlled spaces. It is intended for use in developing future centers and expanding or renovating existing ones. Furthermore, it aims not only to specify design criteria but also to explain the rationale for the criteria in order to enhance professional judgment. The criteria contained in the Guide establish the baseline levels of features and finishes to be provided in all centers. The Guide also identifies desired or allowable design features.

The objective of the Guide is to promote centers that are child-oriented, developmentally appropriate, beautiful, environmentally sensitive, and functional. The designer needs to be aware that a child may be in a center up to 12,500 hours if he or she starts as an infant and continues until entering school.¹ Because children spend such long hours at the center, the design of their spaces is especially critical.

The design effort must allow for, and be sensitive to, the differences in space attributes for children and those for adults as well as the differences in space usage by the children in different age groups. Information about the characteristics and activities of the children is included to provide rationale for aspects of design. The requirements and recommendations set forth in the Guide are aimed at establishing optimal design, though, when appropriate, specific maximum or minimum requirements are stated.

The Guide provides a discussion of issues that affect design. It sets the benchmark. If stakeholders believe that certain features cannot be met at a specific center location, these concerns should be addressed to the Regional Child Care Coordinator (RCCC).

1.2 Users of the Guide

The Guide is intended to be a source of basic architectural information for all individuals involved in the design of Federal child care centers. Individuals seeking detailed information on child care practices, center operations, or general Federal building standards should refer to other documents. Specific users of the Guide include:

Architects and Engineers (A/E's) who will provide design services under the direction of the GSA. In addition, these individuals must use the Guide for pre-design planning or to assess the extent of improvements required in an existing center in order to achieve the standard established herein.

GSA Public Buildings Service will use the Guide in preparation of Prospectus Development Studies, planning and program preparation. The Guide outlines the special GSA child care center requirements which exceed base building alterations and services for office space.

GSA Regional Child Care Coordinators will use the Guide to interpret the level and type of features and finishes to be provided in centers.

GSA Building Managers will use the Guide to maintain all centers and improve existing ones to meet the benchmarks set in the Guide. In addition, the GSA managers will use it for guidance in repair and replacement of existing conditions and equipment.

GSA Real Estate Specialists who will use the Guide when developing Requests for Proposals (RFP) and solicitation for offers (SFO) for the procurement of child care center space.

Federal Agencies planning to contract with private sector architectural firms to establish new centers or renovate existing ones.

1.3 Applicable Documents

Other documents (current editions) that the user must reference include the latest edition of :

- **Administration.** The PBS-PQ100.1a contains standards and requirements for all spaces owned or controlled by GSA. The PBS-PQ100.1a also instructs the user on other codes, standards, and regulations that apply, including access for the disabled, historic preservation, energy conservation, cost analysis, value engineering, and environmental protection. *Note : This document is currently being updated and will be released soon. At that time it will be designated as P 100. 2.*
- **Prospectus Development Study Guide (PDS),** General Services Administration and Agency guidance. An Enhanced Prospectus Development Studies (EPDS) is a variation that includes concept development. The PBS Guide contains project-specific architectural programs, budgets, and implementation strategies.

- *Federal Property Management Regulations (FPMR 101-17), Assignment and Utilization of Space*, General Services Administration. The FPMR identifies policies and procedures for development of space requirements and the use of space in GSA-controlled facilities.
- *Uniform Federal Accessibility Standards (UFAS), Federal Standard 795*, General Services Administration.
- *Americans with Disabilities Act (ADA), and the Americans with Disabilities Act Architectural Guidelines, (ADAAG)*, Department of Justice, Office of the Attorney General.
- *Accreditation Criteria and Procedures of the National Academy of Early Childhood Programs*, National Association for the Education of Young Children (NAEYC).
- *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth to Age Eight*, National Association for the Education of Young Children (NAEYC).
- *Lead in School Drinking Water*, EPA 570/89-001.
- State licensing requirements for the individual states where Federal child care centers are located.
- *Handbook for Public Playground Safety*, US Consumer Product Safety Commission (CPSC).
- *The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, US National Park Service.
- *Fire Safety Retrofitting in Historic Buildings*, August 1989, Advisory Council on Historic Preservation and the General Services Administration.
- *Lead-Based Paint Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing*, September 1990, Department of Housing and Urban Development (HUD).
- *Radon in Water Sampling Manual (EPA/EERF-Manual-78-1)*, Environmental Protection Agency.
- *The Environmental Resource Guide, with Supplements*, The American Institute of Architects, 1996
- *Security Risk Assessment provided by the regional Federal Protective Service (FPS)*

1.4 Organization of the Guide

The following are brief descriptions of each chapter.

Chapter 1: Introduction to the Guide. The chapter describes the purpose of the Guide, its organization, the intended audience, how the information should be applied, as well as other documents that must be referenced. It also contains a glossary of terms used throughout the Guide.

Chapter 2: Mission, Goals, Administration, and Policy. The chapter describes the administration and policies of GSA with respect to child care centers. The chapter also discusses the agency groups involved in the planning and operation of the center, and the process necessary to design a high quality, cost effective child care center. It also deals with real estate management policies affecting center development, standards with which design and operations must comply, and the GSA goals and objectives for center design and operation.

Chapter 3: Children and Adults in the Center. The chapter identifies those who use the center and how they tend to utilize it. A discussion of children's basic developmental needs and activities for each age group, and how these needs and activities impact the design of the center, is also included.

Chapter 4: NAEYC and Other Standards. The NAEYC criteria for operational programs, including child group sizes and staff-child ratios, are summarized.

Chapter 5: Planning for Space and Location. The chapter describes criteria used in selecting a center location together with planning and programming space requirements, as well as example space programs for various center populations.

Chapter 6: Site Design. Concepts and criteria for site design and design of play yards are provided. The general types of outdoor areas and the relationships of these areas to other outdoor and indoor spaces are described. Detailed criteria for materials, features, furnishings, and equipment required in these spaces are given.

Chapter 7: Interior Space Design. The chapter provides concepts and criteria for the design of the interior spaces within a child care center. Major types of spaces include entry and circulation, staff, classroom, common, and service spaces.

Chapter 8: Furnishings and Equipment. General criteria regarding furnishings and equipment for the center, including references to applicable codes and regulations, are provided in this chapter. At the end of the chapter, there is a list of the furnishings and equipment provided by the Federal Government as part of the baseline provisions.

Chapter 9: Interior Finishes. The chapter provides a consolidated discussion of finishes required in child care centers, establishes the baseline finishes, and discusses acceptable options.

Chapter 10: Technical Criteria. This chapter includes technical criteria and identifies the pertinent regulations which will apply to the Guide.

Selected References. A list of other documents relating to child care facilities is contained in Selected References.

Index. The index provides the page number locations of subject categories and specific terms contained within the Guide.

Appendices. Appendices A and B provide additional technical information on metric conversion and listings of appropriate plantings in the vicinity of child care centers.

1.5 Glossary of Terms

Actual Floor Area (AFA) - The square meters required as measured from the inside of partitions, doors, and glazing. AFA includes area required for built-in case goods, fixtures, and equipment.

American Society for Testing and Materials (ASTM) - The organization that develops standards and provides related information on characteristics and performance of materials, products, systems, and services.

Architectural (or Facility) Program - A written and sometimes graphic document that specifies the architectural requirements that the building design must satisfy.

Board of Directors A group, ideally of 7-11 individuals with diverse professional backgrounds and skills to support the selection and oversight of a private sector center service provider. The board should be a non-profit corporation tasked with fund raising and distribution of tuition assistance. Boards coordinate closely with GSA's Regional Child Care Coordinators.

Capacity - The total number of children that may be in care at any one time as specified by the license or letter of compliance.

Child Care - A comprehensive service which enhances the productivity of working parents by attending to the development needs of their children. The intention of high quality Federal child care is to allow employees to respond to their dual work and family responsibilities effectively to the benefit of both families and the Government as employer.

Child Care Center - A licensed child care center is a facility, other than a private residence, approved and licensed by a state or other applicable local authority where a person, other than relative or guardian, is compensated to provide care and supervision for 4 or more children under 7 years of age for less than 24 hours a day. For the purposes of this Guide, a "small" center will be one which is licensed for less than fifty children, while a "large" one is licensed for more than 94 children.

Child Care Center of Expertise - A core group of individuals throughout the country are assigned to this "virtual" organization. They are individuals who pool their various areas of expertise to including program and facilities knowledge to increase the operational excellence of GSA's program. The Center is headquartered in New York City, at GSA's Regional Office. See Appendix C for telephone and mailing information.

Classrooms - The architecturally defined areas that contain each group of children. Classrooms may be separated by full partitions or by partial barriers that also allow controlled visual or acoustical connections to other groups. The internal layout of a child care classroom is markedly different from that of a traditional primary school classroom.

Dead End Corridor - A portion of the egress corridor which does not lead to an exit and which would require an occupant to retrace his or her steps to reach safe exit in an emergency. The maximum allowable length is regulated by applicable codes.

Developmentally-Oriented Child Care - Child care which shows an understanding of the fundamental needs of the developing child, and aids development by providing appropriately structured and free activities throughout the day.

Federal Families - The families of Federal employees.

Gross Floor Area (GFA) - The total area of all floors of a building including main building lobbies, elevator shafts, egress stairwells and exterior partitions measured to the exterior side of the exterior wall.

Group - Two or more children who are cared for in the same self-contained classroom. In addition, these children have the same caregiver who is responsible to address their basic needs, well being and development.

GSA - The US General Services Administration is an agency of the US Government, which, among other responsibilities, provides and manages building space occupied by Federal agencies.

Infant - A child under 1 year of age.

Mixed-Age Grouping - The practice of placing children who are at least one year apart in age into the same child care group. Mixed-age groups usually contain children ranging from 2 to 5 years old.

Net Usable Floor Area (NUFA) - The amount of space the Government must *lease* to accommodate a space requirement. It is comprised of occupiable area plus any additional space (such as corridor spaces) that may be required to meet GSA requirements.

NAEYC (National Association for the Education of Young Children) - A professional organization of early childhood specialists concerned with the care and developmental opportunities provided to children.

Occupiable Floor Area (OFA) - The total area within a Federally-owned or -leased facility which the center occupies. This amount of space is assigned under RENT.

Organizing Committee - The committee tasked with studying the feasibility and logistics of establishing a child care center. Composition of the committee typically includes a proportional representation of federal employees which represent the agency(ies) sponsoring the center. Typically, these individuals may form the core of the permanent Board of Directors.

Parents - For the purposes of this Guide, “parent” is understood to include relatives and guardians responsible for the child in the center.

Pre-School Child - A child who is 3 years old or older and who does not attend kindergarten or a higher grade.

Public Buildings Service (PBS) - A service within GSA dealing with real estate and physical workplace issues. The accountable GSA official for the child care program in each region is the Regional Child Care Coordinator (RCCC)

School-Age Child - A child who is 6 years of age or older.

Self-Contained Classroom or Area - A room separated by permanent walls or an area separated by permanent or portable partitions or dividers acting as a visual barrier.

Teachers - Individuals providing direct care services to children in child care centers. The term, as used in the Guide, does not denote level of education, training, or staff status. Teachers include head teachers, assistant teachers, caregivers, aides, and all others who interact with children on a routine basis for a major part of each day.

Toddler - A child between the ages of 1 and 3. Children between 1 and 2 years of age may be classified as younger toddlers, and children between 2 and 3 years of age may be classified as older toddlers.

1 Quoted from Dr. Anita Olds

CHAPTER 2: MISSION, GOALS, ADMINISTRATION, AND POLICY

This chapter describes the administration and policies of the GSA with respect to child care centers. It discusses the agency groups and processes involved in the planning and design of the center; the operation of the center; the real estate management policies affecting center development; standards with which design and operations must comply; and the GSA goals and objectives for center design and operation.

2.1 Program Goals and Objectives

The primary mission of the GSA Child Care program is to enhance the performance of the Federal employee by offering the opportunity for quality care programs in GSA-owned or controlled space. While families that do not work for the Federal Government may “backfill” slots not used by Federal employees, in order to ensure the viability of the center, Federal employees always have preference for available slots in the center. At the time the center is planned, marketing surveys must substantiate a Federal need to ensure that a minimum of 50% of the slots will be taken by Federal families.

The center design must meet the needs of children, teachers, administrators, and parents by:

- Supporting the staff’s care of children by creating environments that allow them to focus their efforts on the care and nurture of children. The design provides features which encourage strong, positive relationships between staff and children. It is highly functional.
- Creating an environment that comfortably accommodates the needs of well qualified staff in order to attract and retain them.
- Facilitating family involvement in the center, particularly with the child’s caregivers.
- Responding to local conditions, climate, and regional preferences in the design, while also considering the goals of the parents, sponsoring agency(ies), and governing boards of directors.

- Creating an environment that attests to GSA's high level of commitment in providing appropriate, well thought-out and beautiful environments for the children of Federal workers. The appearance and functional arrangement of the center should enhance the Federal asset, especially as it is often a highly visible feature.
- Designing "through the eyes of a child", with a resulting sensitivity to a child's scale, including how they will use the space, what they will see, and what kind of experience they will have.
- Providing an intriguing environment, yet one devoid of overpowering colors, features and literal "themes". The designer should avoid such literalness because it inhibits the child's ability to imagine a series of alternate meanings to objects and features.
- Sizing the classroom to accommodate the recommended group size and staff to child supervision ratios. The design efficiently uses space and incorporates ease of the supervisor together with features such as strategically situated storage.
- Providing durable and cost effective materials and details. This is vital when the designer considers the intensity of use that a center receives. The designer must be particularly sensitive to the life cycle cost of materials.
- Establishing a distinctly child-oriented environment within a federally-controlled facility. The impression created by the design should be the antithesis of a typical institutional setting. In other words, the center should "feel like home" for the child.
- Creating an accessible center for the disabled, staff, parents and children in a cost effective manner.

2.2 Process

GSA has learned through its design and construction experience that *owner involvement at the beginning of the design process, starting at the initial planning stages* is the most valuable investment to ensure the excellence and cost effectiveness of the final result. (Note that the beginning of the process starts with planning and pre-design stages and continues through the design concept. The early stages of design, leading up to the concept, form the foundation of an excellent and functional design.

The design process for new child care centers or major center renovation/expansions must begin with a high level of communication, particularly because a well designed center requires an array of functional and aesthetic requirements in a relatively small space and must satisfy a wide range of "customers."

To accommodate this, GSA will convene a "design workshop", to which all interested stakeholders should be invited, including, but not limited to, building managers, the RCCC, the architectural/facilities representative from the Child Care Center of Expertise, as well as representation from the Board of Directors or the start-up committee, the Agency and the A/E.

GSA has found that projects which start with a design workshop move ahead more effectively. Additional planning up front has been found, time and again, to be well worth the investment.

This design workshop can also be associated with a partnering session. A partnering session can be highly effective in clarifying roles and responsibilities. It typically results in a written charter which the various attendees are invited to sign in order to commit themselves to taking clearly defined steps for collaboration on a successful project.

2.3 Standards

Child care centers must comply with all Federal regulations governing general building types as defined in the most recent edition of the latest edition of PBS PQ100.1a. Center design must comply with:

- *Uniform Federal Accessibility Standards (UFAS) and Americans with Disabilities Act (ADA).* The design must accommodate children and adults with disabilities.
- *Historic Preservation Act.* Modification of historic buildings or buildings deemed eligible for the National Register of Historic Places must follow specific guidelines. The GSA Regional Historic Preservation Officer should be consulted during the planning stages for consultation on renovating space in a building:
 1. Which is at least fifty years old (or will be when the renovation is completed).
 2. Which is deemed to be exemplary of a particular style.
 3. Which has historic significance in terms of events to which the building is related.
- When there is doubt about historic eligibility, consultation with the GSA regional historic preservation officer is strongly recommended. Adequate time should be budgeted for this possibly involved process, so early recognition of the need for consultation can be crucial to project success. It should be noted that the design and appearance of playgrounds has also been a difficult issue in the past when they are located near historic buildings.
- *Energy Policy Act of 1992.* The center design must minimize energy use. The design should use the life cycle costing methodology in estimating and comparing investment decisions involving capital and operating costs. Mechanical systems, and introduction of features such as overhangs to diminish long term energy use are examples of such major considerations.

As terms of the special conditions of the license under which child care centers in GSA operate, after a specified period of time (typically after one year of operation), the provider must commit to beginning the accreditation process of the *National Academy of Early Childhood Program*. This is a division of the National Association for the Education of Young Children (NAEYC). Receipt of accreditation entails approximately one year if the center “passes” at the first opportunity. Accreditation is defined by the *Accreditation Criteria and Procedures*

of the National Association for the Education of Young Children published by the NAEYC. Refer to Chapter 4 of the Guide for more information. Child care centers must also comply with State and local licensing regulations before opening, and any other applicable standards.

2.4 Authority of the GSA

United States Code 40, Section 490b (as amended), passed by Congress in 1985, gives Federal agencies the authority to establish child care centers in Federal facilities. This is sometimes referred to as the “Trible Amendment.”

The Child Care Program which is organized in various offices of GSA is responsible for the following:

- Policy clarification on issues which impact child care centers in GSA space. In addition, GSA compiles data on child care centers and execution of the Program’s policies. Through its design reviews, the physical status of the center is measured against the baseline set forth in this Guide. The purpose is long-term budgeting for the nationwide program to establish a “master plan” that brings all centers to the level established in the Guide.
- Resources and training to Regional Child Care Coordinators and Building Managers and the national child care community.
- Periodic training events for regional program coordinators, center staff, providers, governing boards, and agency representatives, as well as provision of training materials.
- Special projects and publications on new initiatives and policies.
- Sponsorship of the Interagency Task Force on Federal Child Care.
- Consultation on Planning, Concept Design Review and final approval for center design concept. In order to expedite the design process and to help ensure that the final outcome meets national program objectives, the facilities expertise of GSA’s program must be involved in the design and planning process at the earliest stages. When a PDS, for instance, which GSA’s Portfolio Management Division has determined will involve a new or expanded child care center, facilities expertise available through GSA’s Child Care Program must be involved. It is at the planning stage that the important budgeting decisions are made. The planning process recommends allotment of funds for components and features which, while having a higher first cost, will lower the life cycle costs of the center. Unless these are considered at the initial planning stages before actual design begins, the budget will rarely be adequate to ensure their incorporation. When that happens, it is a missed opportunity for long- term savings.

When the Regional Child Care Center Coordinator (RCCC) recommends approval the design concept, working drawings for the project may proceed. the Child Care Program should also review the drawings as the details are developed, (typically at the 50-60 % level of completion) to ensure that the level of detail is congruent with the objectives of the Design

Guide and the Program.

GSA has a network of 11 RCCC's (see Appendix C for telephone numbers and addresses) who deliver the following services:

- Providing guidance, assistance and oversight to Federal agencies during the development and operations of child care centers
- Providing program review, and oversees licensing compliance
- Providing on-going technical assistance and resources to governing boards, organizing committees, and Federal agencies as well as (indirectly) to child care center directors and vendors

2.5 Center Management

The GSA does not directly operate GSA child care centers. GSA grants authority for the day to day management of the center either to a Board of Directors or a private provider to use Federal space to operate the child care center under a revocable license agreement, which includes a series of special conditions.

The principle management model and the parties involved are as follows: The Board of Directors, (which is not a GSA entity) contracts with private sector providers. This is the predominant and preferred method of operation. Variations of this model may exist, depending upon circumstances. For instance, the sponsoring agency may obtain the license and contract directly with the provider. GSA has a Board of Director's Manual which can be obtained, together with other information, through the Regional Child Care Coordinator. That publication includes a discussion of each model.

Regardless of which management model is utilized, a Parent Advisory Committee (PAC) may be established. The purpose of the PAC is to inform parents, providing input to the center, raising funds, and providing volunteers. A representative of the PAC generally serves as a liaison for the parents, either by serving on the board or by working directly with the agency.

2.6 GSA Policy for Allocating Costs

GSA Public Buildings Service (PBS). The GSA PBS is the "landlord" for child care centers located in GSA-owned or controlled space. The GSA PBS typically provides finished space, and will provide planning, design, and construction services. Center rent is billed as "joint use" space. PBS collects the annual user charge from the sponsoring agency (ies). GSA, in partnership with the sponsoring agency, ensures that telephone services, utilities, physical maintenance and janitorial services are provided to the center and that the space is safe and environmentally healthy.

The Federal Property Management Regulations (FPMR 101-17) define space classifications that determine the annual user charge. The GSA PBS Property Management assigns all space

occupied by child care centers to one space classification. Within the baseline provisions of this classification, it is the intent of the GSA to provide an operable center for the sponsoring agency(s). The following are the baseline provisions for child care centers in the eGSA system:

- Standard finishes and features for typical office space prescribed by the latest edition of the latest edition of PBS PQ100.1a.
- Cabinets, millwork, and all built-in items as defined in the Guide.
- Special finishes and features as defined in the Guide.
- Furniture and equipment as listed in the Guide (subject to RCCC approval).
- Power, conduit for wiring, and space for electronic communication and security equipment as defined in the latest edition of PBS-PQ100.1a.
- Security equipment as defined by the GSA, based on the FPS risk assessment for the identified site. Power, conduit for wiring, and space will be provided as defined by the latest edition of PBS PQ100.1a. Security equipment requested for the center, but not required by the GSA, will be funded by the requester and provided by GSA.
- Power, conduit for wiring, and space for telephone communications equipment as defined by the latest edition of PBS-PQ100.1a. Baseline provisions include telephone/intercom hand sets and switch gear as defined by the PBS-PQ100.1a.
- Fire protection systems (e.g., fire detection, fire alarm, and fire suppression) as defined by the latest edition of PBS PQ100.1a and as amended in the Guide.
- Laundry equipment and a kitchen with heavy duty equipment, capable of accommodating full food service or meals prepared by an on-site cook. Specifics about the grade of required equipment must be clarified at the time of the concept design.

CHAPTER 3:

ADULTS AND CHILDREN IN

THE CENTER

This chapter identifies users of the center, the basic needs and activities of each age group, and how these needs and activities impact the center design.

The design of the child care center should accommodate the needs of children, parents, teachers, administrators, and service personnel in a comfortable and nurturing environment. It must allow adults to care for children in settings designed primarily for use by children.

3.1 Adults

3.1.1 Parents:

Congress granted authority for use of Federal space for child care predicated on the anticipated increase in worker productivity that would result from on-site child care. Like many private employers, the Government saw that providing parents with the opportunity for quality child care could enhance the performance of the organization — especially because the majority of worker absences result from the a break down in child care arrangements.

So the designer needs to keep the needs and convenience of these busy adults in mind when planning and designing the center. At the same time, the design should provide a setting that supports a community of center users. This will serve the needs of the children and the Agency. It will enhance a natural, home-like environment for children and will increase the employee's allegiance to the workplace as a quality, family-friendly environment. The design can respond to the needs of parents by addressing:

- Temporary parking arrangements for drop-off and pick-up
- Ease of navigating corridors with strollers and buggies (angled corners are an aid)
- Stroller storage
- A clearly visible bulletin board location
- Mail boxes dedicated to the needs of parents
- Central, relaxed-feeling place for parents to meet and chat with other parents and staff, and to deposit tuition checks, etc.

- Ease of assisting children with outer garments in spaces designed to accommodate several children and adults as they do the same
- Private space for parent/teacher to confer
- Adequate refrigerator space to store formula and food

Adult family members spend time in the center in several different ways, including arriving with the children, and picking them up to take them home, as well as spending time with them while at the center. For instance, parents may eat lunch at the center with the children, meet with teachers and staff, socialize with other parents, and participate in center activities, organizations, and programs. The center may even function as a focus for human contact and stress reduction that is not possible within the worker's own work environment.

For instance, parents accompany their child to the classroom. When they arrive there, the parents usually help children remove and store their outdoor clothing. They may bring infants in strollers. They also leave messages for teachers and receive messages from them, usually at one location designed specifically for that purpose. They may linger to spend time with the child or to talk to the teacher before departing. The entry, reception, and classroom cubby areas provide a social setting for the parents, without disrupting the flow of activity in the classrooms.

Parents may visit their children during the day. Nursing mothers might visit the center to feed their infants, and therefore a private, intimate-feeling area should be provided for them to do this.

Parents also come to the center for conferences with teachers. Information may be posted for the parents on a bulletin board, typically located along the entrance path. The center will have slotted fee boxes for tuition checks and small cubbies for private mail communications between the parent and the center. These must be considered in the design. Finally, parents are encouraged to participate in volunteer activities at the center such as serving on committees or boards, participating in fundraising activities, assisting with field trips, and various types of classroom assistance.

3.2 Staff

3.2.1 Teachers:

Teachers care for and supervise the children. In a quality program, they promote learning and developmental activities through a curriculum designed for stimulation and development. Curriculum activities occur not only in classrooms, but in play yards, multiple-purpose spaces, and on excursions outside the center. Teachers are responsible for the children while at the center, including greeting them and their parent when they arrive. Teachers ensure that only authorized individuals pick up the children at the end of the day.

Teachers also prepare curriculum materials and projects for the children and confer with the parents and administrators. Teachers need time away from their classroom in a separate lounge, which may double as a workroom. They need adequate storage areas, not only for

curriculum materials and supplies, but also to lock up their personal effects. Because their job is demanding, the designer should focus on creating organized arrangements so that teachers may focus more easily on the children. This is one of the core challenges in designing a center. The design can facilitate the needs of teachers by providing:

- Ample elevated wall hung storage (above children's level but also located to avoid the possibility of adults striking their heads on it). All elevated storage should be designed to avoid the possibility of items inadvertently falling on children below.
- Elevated electrical outlets for equipment such as audio devices. (There should also be CD and tape storage.) Locations should be coordinated with the RCCC and with the provider (if possible).
- Planning and designing the center so that location of outlets is convenient to elevated electronic equipment.
- Conveniently located, accessible adult toilet(s), complying with ADAAG.
- Convenient storage for teachers' outer garments and items such as boots, etc.
- A comfortable and private place to confer with parents.
- A resource room where teaching materials and equipment can be stored in an orderly and highly visible fashion.
- Locked space to store personal belongings.
- A comfortable lounge which teachers can use for breaks, lunches, and to prepare teaching plans and materials
- Adequate shelving or counter space for teachers to display teaching materials within the center.
- An easy means of displaying children's art projects at children's level.

3.2.2 Administrators:

Also referred to as **directors**, are responsible for managing the center, supervising the teaching staff, and communicating with parents, boards of directors and the GSA Regional Child Care offices. In small centers, the administrator may also assume a teaching role for part of the day. In large centers, the director will usually have a secretary or assistant to help with the administrative workload.

The needs of the Center Administrator can be met by providing:

- An optimal amount of visibility, particularly to easily observe those approaching and entering the facility.

- Locked space for personal belongings
- An adequately sized office with room for a desk, an office chair, at least two visitor chairs, filing cabinets, space for equipment (unless it is located elsewhere) including a personal computer, printer, copier and fax machine.

If provider personnel, including the administrator, are consulted during design, their input about work flow, filing and equipment needs can be very valuable. However, the designer should be cognizant that the provider works under a GSA license. The provider, in effect, is the tenant and GSA is the owner or controller of the space. Therefore, provider's guidance should not be interpreted as a directive, especially when it contradicts elements of this Guide or the direction of GSA personnel charged with control of the space.)

3.2.3 Service Personnel:

Centers require food, laundry, janitorial service, delivery, waste and refuse removal, and general maintenance services. The design must provide space and controlled access for personnel or contractors performing these services.

Some of the centers located in GSA-owned or controlled space purchase catered food service, but the baseline facility should contain an in-house preparation kitchen with heavy-duty equipment and a cooking staff.

Laundry services will typically be performed by the teaching staff. Infants and toddlers generally use disposable diapers provided by parents. All soiled diapers are contained and processed separately from other waste and linens. Facilities need to be provided for this. The needs of the service personnel can be expedited by:

- Adequate space in janitor's well-located closet for cleaning materials
- Ease of supply delivery
- Efficiently designed facilities for waste disposal
- Adequate locked storage for toxic materials
- Easily implemented recycling programs
- Adequate counter space and efficient kitchen arrangement
- Adequate refrigerator space
- Generous, deep three compartment sink and gooseneck faucets with spray attachment and disposal in kitchens

3.3 Children

Pre-school and younger children spend an average of nine hours per day at the center. For most of their care, children remain at the facility. There are occasions when the children leave

the center on field trips with teachers and center volunteers. The center must promote a child's optimal development by providing safe, interesting, and appropriate environments which allow the children to engage in developmentally appropriate activities.

Children's needs, in many respects, correspond to their age. Although each child develops according to his or her unique schedule, children can be characterized as belonging to general age categories of development, with each age group having a different set of needs. To meet these needs, the space for each age group will be inherently different.

The following four broad age groupings will be referred to throughout the Guide. In any individual center, actual age ranges between groups may overlap. In some centers, children may be grouped in mixed-age classrooms. Age ranges are as follows:

- Infants (birth to 12 months)
- Toddlers (12 to 36 months), including sub-groups of:
 - Younger toddlers (12 to 24 months)
 - Older toddlers (24 to 36 months)
- Pre-school children (3 to 5)
- School-age (6 years and older; enrolled in after-school or summer programs at the center)

Centers typically do not care for children over 5 years of age unless the center runs a summer program, a kindergarten, or a before and after school care program.

3.3.1 Infants:

For the infant, the environment must provide many opportunities for activities throughout the day. The infant classroom needs to be warm and nurturing in character. Typically, infant groups will be comprised of six to eight infants cared for by two teachers. Infants are brought to their classroom by their parents. Clothing and supplies, usually carried in a diaper bag, are placed in each infant's cubby storage space. Diapers and wipes are stored in separate compartments at the diapering area within easy reach of the changing table. Strollers or tote bags that are left at the center during the day, should be stored on pegs or rods in storage areas. Formula is kept refrigerated.

As infants mature, their sleep needs decrease from the frequent naps of young infancy to a few naps at regular times during the day. Because each infant may have a unique schedule, a variety of activities can take place in the infant room at any given time, ranging from playing, diaper changing, and eating to sleeping, cuddling, and nursing. This variety of activities requires that quiet areas be separate from more active areas.

Most infants have not begun toilet training, so frequent diaper changes are needed. When teachers are with an infant at the diaper changing table, they also need to supervise other infants and maintain visibility to other infants. Visible connection between teacher and infant should be maintained to the maximum extent feasible. The design and location of changing

tables should reflect this requirement. Teacher views into the activity area should be unobstructed while at the diaper changing area. When infants are in the activity area, they must be able to see teachers as well.

During the first year, the infant's diet progresses from nursing and bottle feeding to soft foods and finger foods. For young infants, eating is a nurturing time, with the infant either nursed by the mother or held by a teacher or parent during bottle feedings. Teachers may start to feed infants soft foods at around 5-6 months. At around 9 months, infants, seated in low high chairs, begin to feed themselves and drink from cups. This process can be a very explorative and messy. At around 12 months, infants eat at low, round tables. The dining atmosphere changes from a quiet, intimate environment to an active, social event.

Developmentally appropriate activities for this group include interaction with teachers, children, and other infants; experiencing the environment through all the senses; and physical movement through the space. Infants need a safe, stimulating environment where they can explore, absorb, and organize information about their world. They exercise muscles by crawling and climbing on soft surfaces and over slight level changes. They can pull to standing and practice walking by using low grab bars.

Manipulative, stimulating toys and other learning materials help infants learn about objects and enable them to develop motor coordination. Toys should be placed on low, open shelving where the infant can see and grasp them. In rooms with high ceilings, mobiles may be hung from the ceiling at least 2035 mm above the floor.

The classroom should offer a series of intriguing attractions for crawling and standing infants, particularly at eye level (300 mm - 450 mm above the floor). The environment, including toys, aids in the infants' language development. The design and scale of furnishings and equipment in the infant room should support the infant's activities, while assisting the care-giving adults. The design must allow teachers to see and hear all the infants at any given time, and quickly reach any one of them if the need arises. Infants also must be able to readily see the teacher as they need the psychological security of a teacher's presence.

Infants spend time in their outdoor play yard under the supervision of their teachers safely apart from, but usually in view of, the older children. Infants, particularly those that are crawling and starting to walk, require outdoor opportunities to explore and move about the safe world of the infant play yard.

Teachers may assist infants in their exploration of the world by taking them on "strolls" through the building and outdoors. Infants, riding in groups in multi-passenger strollers, benefit from both social interaction and sensory stimulation from these excursions. Some conditions that will greatly enhance the quality of care which teachers can provide include the following:

- Gross motor area (away from the main circulation flow) that is soft and easily cleaned, with a provision of continuous soft mat. Typically, the area should be defined by a low (300-450 mm) padded bumper which may or may not be built-in to contain the crawl area and to provide for adult seating near infant's level.

- Low padded risers for level change.
- Visual contact with the exterior at infants' eye-level.
- Cribs directly observable by teachers.
- Cribs located under soft, preferably dimmer-controlled lighting.
- Toys easily accessible to the infants from open shelving.
- Provision of continuous impervious flooring in the feeding area.
- Provision of space for infants to eat in a social environment (as opposed to an isolated, lined up high chair arrangement.)

Though the actual equipment is provided by GSA, it is essential that the A/E verify dimensions and indicate the location (using dotted lines) of all major equipment, particularly cribs and feeding components on the architectural plans. This will ensure the proper fit and clearances are achieved in the final result.

3.3.2 Young Toddlers:

The toddler classroom hums with activity as toddlers quickly move through their space, involved in all the activities available to them. This environment needs to be stimulating, offering the child a safe, yet warm and nurturing place to spend the day. Often, this group includes 2 teachers and 10 to 12 younger toddlers or up to 14 older toddlers.

At the beginning of the day, toddlers arrive at the classroom with their parents who may assist them with removing their outdoor clothing and storing items in their cubbies. Young toddlers will usually have diaper bags to store in their cubbies and supplies to be placed at the diapering area. The older toddlers may bring lunches or toys from home, perhaps carrying them in satchels or backpacks which can also be used to carry such things as papers and art work home at the end of the day. Satchels and backpacks may be stored in the cubbies or within the classroom on hooks provided.

Toddlers are in the process of gaining independence, advancing in their feeding, toileting, and dressing skills. Furnishings and equipment need to be scaled for this age group to encourage growth toward independence. Older toddlers may nap only once a day on cots or mats which are stored while not in use, while younger toddlers may nap more often and need a crib in a quiet area. Most care functions take place in the classroom with the teacher's assistance. Toddlers gather at child-scaled tables for snacks and lunch time. They can feed themselves with some assistance from their teachers. Toddlers are beginning toilet training and require a child-scaled toilet area in their classroom. Young toddlers still need a diapering areas well as child sized toilet facilities.

3.3.3 Older Toddlers:

Toddlers are busy experiencing their environment, developing essential motor skills as they take part in active play. They are mastering walking, and are beginning to develop running,

jumping, and climbing skills. Toddler rooms need to provide stimulating opportunities for active crawling, pushing wheeled toys, climbing in and out of play components, cruising, (movement through space to view and select from a variety of activities), as well as beginning to walk, and climbing up and down stairs. Toddlers tend to move about very quickly, often in groups rather than individually, and the design must allow for this group action. Features such as wide access to lofts and generous, clear pathways that avoid sharp corners should be provided.

This age group is involved in other developmental activities as well, such as beginning block play and social play and space must be provided for these activities. The development of language skills is assisted through the use of simple books, pictures, puzzles, and music.

Toddlers thrive on exploration and creativity; enjoying fantasy activities, playing with props, and making choices. Manipulative toys and materials should be located on low, open shelving where the toddler can see and easily reach them.

Teachers in this classroom assist and interact with the toddler, encouraging the development of greater independence. Though space should be generally scaled to child size, the classroom design must also permit teacher access to all spaces. To enhance the functioning of the center experience has shown that a diaper changing table should be provided in older toddler classrooms, even though older toddlers are typically toilet trained. This addition will help teachers cope with the occasional “accident” and will allow greater flexibility. Providing retractable steps that pull out from beneath the dialer changing table, so that teachers do not have to lift children are particularly important for this older age group.

While toddlers are beginning to develop, they need easy visual access to their teachers for security and comfort. A functional and nurturing feature which is highly recommended is a simple series of three to four low risers which several toddlers at a time can occupy. This arrangement also provides excellent seating for adults while they interact with several children — reading them a story, for example.

Toddlers, accompanied by their teachers, will spend time in their outdoor play yard, apart but not visually or acoustically separated from older children’s play yards. The outdoor space offers many opportunities for activities such as cruising, climbing, and manipulative play involving materials such as sand and water. This group may take part in activities in a multiple-purpose area as well. Toddlers, with their teachers, may go outside the building on excursions, allowing for more exploration and interaction. Younger toddlers may need to be transported in multi-passenger strollers. Older toddlers may walk hand-in-hand with their teachers.

3.3.4 Pre-School Children :

Pre-school children are expanding their vocabulary, and are developing language, small and large muscle coordination, and complex cognitive/social skills. This group may consist of as many as 18 to 20 pre-school children (with 2 teachers) busily pursuing all the recommended activities available to them in an environment which is safe, durable, and interesting without over-stimulating the children.

These children arrive at the classroom with their parents, and, after storing their outdoor clothing and personal items (perhaps using a satchel or backpack), they begin their day in the center. The pre-school classroom needs large, bright, unrestricted spaces, as well as intimate, quiet, carpeted areas.

Pre-school children usually need a nap or quiet time. This normally occurs in the classroom space on cots or mats that are stored when not in use. Mealtime is an opportunity for social interaction as the children and their teachers gather around tables in the classroom to eat snacks and lunch.

Children at this age are actively exploring their environment; exercising large muscle skills by running, jumping, galloping, riding wheeled toys, and playing various ball games. The pre-school classroom requires a large amount of architecturally unrestricted available space which teachers and children can divide into smaller learning environments. The number of children in the group and the type of activities in which they are involved impact this space requirement. Because they have typically become more independent, they tend to initiate their own activity by accessing appropriate materials and by displaying their own work.

Other activities for this group are dramatic play, music, painting, puzzles, block play and storytelling. Children are involved in projects, including art, manipulative play, simple food preparation, elementary math, problem solving, science, and gardening.

Pre-school children will spend a lot of time in their outdoor play yard as weather permits and also in a multiple- purpose space, if provided. They will participate in many of the same activities in the play yard as those pursued in the classroom. Children will also go on field trips outside the center, either walking with their teachers or being transported.

3.3.5 Kindergarten:

Kindergarten classrooms, when provided, will have a layout similar to the preschool classroom except that accessible toilet facilities are to be separate for boys and girls with partitioning for privacy if more than one toilet is provided. Ensure that local licensing requirements are met.

3.3.6 School-Age Children:

School-age children come to the center for before/after-school care, kindergarten and summer programs. Their needs differ from pre-school children, and the area of the center devoted to them should reflect those differences, including the need for separate male and female toilet facilities.

This group can have as many as 20 to 24 children with 2 teachers. Their classroom, and ideally even its entrance, should be somewhat apart from the other classrooms. The area should include appropriately scaled furnishings and equipment, and a slightly more sophisticated atmosphere. Separate and private toilet facilities are required for boys and girls.

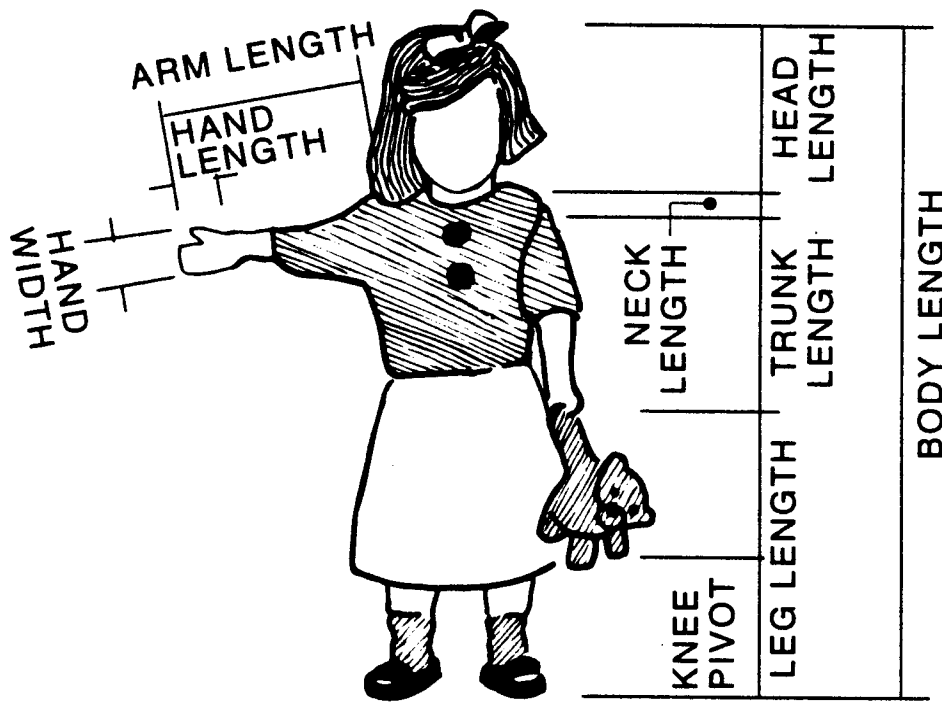
School-age children spend their time in the center in developmentally appropriate activities. They may eat or snack, do homework, enjoy audio-visual entertainment, play games, and

participate in active games and outdoor sports. Children coming to the center from a full-day school program need space that is home-like and comfortable, that provides areas for both quiet activities and more active play.

After-school programs require a separate classroom, but not one necessarily contiguous with the rest of the center. Summer programs for school-age children may utilize a flexible area within the center, such as the multiple purpose space. The after school group is taken on many excursions outside the center and generally utilizes the center space only for the beginning and end-of-day portion of their program. The needs of this age group can be accommodated by providing:

- Adequate space for storage of child's personal belongings
- Low shelving for teaching materials, toys and manipulatives
- Generous amounts of vinyl tiled floor area under eating, and messy project areas
- Corners left unencumbered by storage so they can be used as interest areas, "retreats", or for activities
- A loft that presents physical challenges as well as a "place apart" for gathering of small groups

Figure 3.1: Anthropometric Dimensions



3.4 Anthropometric Information

Average physical dimensions of children according to their chronological age are presented in the following table.¹

Table 3.1: Anthropometric Data

The following dimensions represent averages

	Age (in years)							
	Birth	0.5	1	2	3	4	5	6
	Dimensions (in millimeters)							
Body Length	500	660	750	860	950	1040	1120	1170
Head Length	125	150	175	190	195	198	200	203
Head Width	97	119	132	140	142	145	145	145
Head Circumference	556	439	472	498	498	505	511	516
Trunk Length	211	295	320	345	363	381	389	399
Shoulder Width	150	178	203	224	236	246	254	262
Chest Circumference	330	437	475	508	521	528	538	554
Abdominal Circumference	na	411	445	462	470	516	518	521
Pelvic Width	81	117	130	145	157	175	185	196
Arm Length	193	254	305	371	417	424	503	533
Hand Length	na	na	97	107	119	124	127	130
Hand Width	36	41	43	48	51	51	56	58
Leg and Thigh Length	168	208	244	312	371	437	582	627
Sitting Height	na	447	488	538	572	597	622	635
Knee Width	38	na	64	66	69	69	69	71
Weight in Kg	3.4	7.6	10	12.6	14.6	17.3	19.5	21.
Knee Pivot to Floor	na	na	na	244	264	287	318	340
Knee Width	38	na	64	66	69	69	69	71

¹ Anita R. Olds, Ph.D., ARCHITECTURAL PROTOTYPE DOCUMENT, Commonwealth of Massachusetts, 1987; Diffrient, N., Tilley, A.R., and Bardagly, J.C., HUMANSCALE 1/2/3 MANUAL, Cambridge: MIT Press, 1974; Society of Automotive Engineers, Inc., ANTHROPOMETRY OF U.S. INFANTS & CHILDREN, Michigan: 1975.

CHAPTER 4: NAEYC AND OTHER STANDARDS

This chapter summarizes the National Association for the Education of Young Children (NAEYC) criteria for operational programs including child group sizes and staff-child ratios. NAEYC is a nationally recognized accrediting body, and its criteria are in addition to state and local licensing and code regulations. Should conflict arise between NAEYC criteria and other applicable codes and regulations, those deemed most restrictive will apply.

4.1 NAEYC Program Criteria

The NAEYC criteria are stated in ten broad categories, each having a primary goal. The following are citations of the goals¹ and discussions of the general design implications. The purpose of the design criteria in the Guide is to achieve or exceed the NAEYC goals.

4.1.1 Interactions among Staff and Children:

GOAL: Interactions between children and staff provide opportunities for children to develop an understanding of self and others and are characterized by warmth, personal respect, individuality, positive support and responsiveness. Staff facilitate interactions among children to provide opportunities for development of self-esteem, social competence, and intellectual growth.

A prime objective of a successful design is to create conditions that allow care givers and children to interact both verbally and non-verbally in large and small groups. To do this successfully, classroom space should not appear crowded. It should include low tables, several interest areas and the space for care givers to communicate individually with children. If there is adequate space, and the arrangement allows, tables and counters which put children face to face can help promote an environment that encourages social interaction. All rooms should have comfortable seating for adults. The designer should not restrict his or her exploration to chairs. There is a range of seating conditions to be explored extending from hammocks to built in benches. Window seats are particularly inviting for adult/child interaction. To engender the desirable trust between caregivers and infants as well as visiting parents, it is desirable to have space for glider chairs in infant rooms of the type that will not allow children to catch fingers in moving parts.

4.1.2 Curriculum:

GOAL: The curriculum encourages children to be actively involved in the learning process, to experience a variety of developmentally appropriate activities and materials, and to pursue their own interest in the context of life in the community and the world.

Classrooms must have sufficient space, equipment, and storage to support a developmentally oriented curriculum. Classrooms must be configured well enough to allow circulation to each area while minimizing disturbance to other children engaged in an activity. Well located storage is absolutely vital to maintaining ease of circulation and supervision. The center must have child-accessible displays of curriculum materials, either on built-in open shelving at the child's height or by movable, open, child-scale shelving units. The design must support a balance of the following activities:

- Indoor and outdoor
- Quiet and active
- Individual and group
- Large and small motor activity
- Child and staff initiated

4.1.3 Staff-Parent Interaction:

GOAL: Parents are well informed about the program, and welcomed as observers and contributors to the program.

The center must provide adequate areas for private consultation between teachers and parents. A reception area for check-in must also be provided. Space in the classroom must be adequate to accommodate parent visits. Bulletin boards for parent notices, mail drops near the main entrance, and newsletters should be available for communications between the center and parents.

4.1.4 Staff Qualifications and Development:

GOAL: The program is staffed by adults who understand child development and who recognize and provide for children's needs.

The quality of a center's design can play an important role in attracting and retaining skilled staff who spend so much of their time in classrooms. A properly designed center can improve staff attitude, reduce stress, and minimize the effort of the teachers. It can also integrate appropriate acoustical treatment and separation of active and quiet areas to reduce noise levels. The appropriate arrangement of the diapering areas to allow easy supervision makes the staff's job easier. Classroom features should be considered to reduce the effort required for teachers to perform their tasks. Conference space must be adequate to allow for staff

training sessions and regular staff meetings. A separate lounge with lockable storage space for staff personal belongings provides staff members with a quiet break area. The lounge should include ample storage space for resources and equipment. It is also highly desirable to have space to prepare large materials and lessons.

4.1.5 Administration:

GOAL: The program is efficiently and effectively administered with attention to the needs and desires of children, parents, and staff.

The placement of the director's office space should facilitate frequent contact with the children, parents, and staff. Adequate space must be available for parent orientation sessions. Adequate work space and file storage must be provided to support a center director in the performance of administrative tasks. The arrangement of office space should be studied to ensure the adequate amount of storage space and efficient placement of equipment.

4.1.6 Staffing:

GOAL: The program is sufficiently staffed to meet the needs of and promote the physical, social, emotional, and cognitive development of children.

The size of classrooms must allow for the optimal supervision ratio between staff and children. Table 4.1 establishes the permissible staff-child ratios and group sizes for Federal child care centers. The center must also comply with local licensing regulations.

4.1.7 Physical Environment:

GOAL: The indoor and outdoor physical environment fosters optimal growth and development through opportunities for exploration and learning.

The physical environment supports the operational quality of a center and profoundly affects the behavior and development of children, as well as the efficient functioning and sense of well being in adult caregivers. A pleasant functional environment is bound to influence the way caregivers react to the children. Likewise, when we consider that young children do not yet talk, or do not talk with adult sophistication, we can appreciate the power of the cues the environment gives them. The ideal environment is intriguing, rich and challenging to children, but is not over-stimulating or "flashy". It is rich in subtle visual and tactile experience, incorporating natural elements to the maximum extent possible. The center must have sufficient activity space, storage, and curriculum materials for the children. Outdoor and indoor space must be provided, with both quiet and active play areas. The criteria set forth by the NAEYC in this category are embodied in the standards of the Guide.

4.1.8 Health and Safety:

GOAL: The health and safety of children and adults are protected and enhanced.

The Center's design must comply with the requirements of the latest edition of Facility Stan-

dards for the Public Buildings Service, (PBS-PQ100.1a). The security assessment of the facility available through the regional FPS is an essential guide to security requirements for specific locations. It must also comply federal, state, and local codes and standards which may apply. The center design must facilitate both teacher supervision, and ease of maintenance. Because centers must be cleaned much more frequently than office space, for example, design details should be considered with this in mind. Properly designed, well located toilet and handwashing facilities are essential. Lockable storage must be provided for poisonous materials in each classroom, kitchen and laundry area.

In addition, educating staff and children about fire safety features such as the proper path to exit the building should be a part of regular fire drills.

4.1.9 Nutrition and Food Service:

GOAL: The nutritional needs of children and adults are met in a manner that promotes physical, social, emotional, and cognitive development.

The center design must provide ample space for the storage and preparation of food. Space requirements will depend on whether food is catered, prepared on site, or brought from home. In most instances, food will be prepared on site because it typically results in more affordable care. The design process should make all parties aware of the long-term costs and ramifications of catered food service. Though catering typically results in a lower first cost, GSA has had to convert the designs of several centers from catered to on-site preparation which is not cost effective.

Food service facilities must accommodate the serving of nutritious meals and maintain the quality of food. Special accommodations must be provided for infant feeding and nursing.

4.1.10 Evaluation:

GOAL: Systematic assessment of the effectiveness of the program in meeting its goals for children, parents, and staff is conducted to ensure that good quality care and education are provided and maintained.

Space must be supplied for the filing and storage of children's records, observations, case studies, et cetera. A staff training area, such as a conference room, should be provided.

4.2 Group Size and Staff-Child Ratio

Sufficient staff **MUST** be available to provide frequent personal contact, meaningful learning activities, supervision, and physical care. A limited group size and a limited ratio of children to staff are critical for program success. Group sizes should be small so children receive personal attention and do not feel overwhelmed. The ratio of staff to child will vary depending upon:

- Age of children
- Type of program activity

- Inclusion of children with special needs
- Mixing of children of different ages (age mixing)/State and local licensing requirements
- The following are two patterns for separating children into groups according to their age category. In both patterns, infants and toddlers must be physically separated from older children.
- **Age Separation** is the grouping of children into single-age classes. This practice allows adult providers to care for children who are close in chronological age. Some of the advantages noted below for age mixing can be facilitated by placing windows at children's level between classrooms so that children can observe the behavior of other groups. Apart from other advantages, the effect is to expose younger children to the behavior of older children as a teaching and socialization aid.
- **Age Mixing** is the placing of children who are at least a year or more apart in chronological age into the same child care group. Groups with mixed ages of older toddlers and pre-school children may provide advantages by encouraging interaction between children of different ages. When children 2 years old and older are part of a mixed-age group, the center must adhere to the group sizes and teacher-child supervision ratios shown for those younger children on the following page.

Classroom size must be consistent with group size. Following is the NAEYC table defining group size and required staff-child ratios.

Table 4.1:*Recommended Staff-Child Ratios Within Group Size*²*

	Group Size										
Age of Children	6	8	10	12	14	16	18	20	22	24	28
Infants (birth-12 mos.)	1:3	1:4									
Toddlers (12-24 mos.)	1:3	1:4	1:5	1:4							
2-year-olds (24-30 mos.)	1:4	1:5	1:6								
2½-year-olds (30-36 months)		1:5	1:6	1:7							
3-year-olds				1:7	1:8	1:9	1:10				
4-year-olds					1:8	1:9	1:10				
5-year-olds					1:8	1:9	1:10				
6-to-8-year-olds (school age)							1:10	1:11	1:12		

* Smaller group sizes and lower staff-child ratios have been found to be strong predictors of compliance with indicators of quality such as positive interactions among staff and children and developmentally appropriate curriculum. Variations in group sizes and ratios are acceptable in cases where the program demonstrates a very high level of compliance with criteria for interactions (A), curriculum (B), staff qualifications (D), health and safety (H), and physical environment (G).

4.3 Additional Requirements

In addition to complying with NAEYC criteria, child care centers in GSA-owned or -controlled spaces must comply with the licensing requirements of the state in which they are located. When there is conflict between criteria, the most stringent requirements will apply. Licensing requirements vary between states and are constantly being updated and modified. The user must review the requirements of the specific state at the time the center is designed.

1 ACCREDITATION CRITERIA & PROCEDURES OF THE NATIONAL ACADEMY OF EARLY CHILDHOOD PROGRAMS, Washington, D.C.: National Association for the Education of Young Children, 1991.

2 Amended from ACCREDITATION CRITERIA & PROCEDURES OF THE NATIONAL ACADEMY OF EARLY CHILDHOOD PROGRAMS, Washington, D.C.: National Association for the Education of Young Children, 1991.

CHAPTER 5: PLANNING FOR SPACE AND LOCATION

This chapter contains criteria to be used in selecting a center location and for planning and programming the space requirements. Example space programs for different center sizes are also provided. Any variances to the mandatory requirements must be approved by the RCCC.. The likelihood of the need for such a variance should be identified as soon as possible in the design process. Typically, this would be at the initial design workshop or during the PDS process.

The center is subject to the state and (if applicable) local child care licensing requirement. The designer and the user must review these requirements during the initial phases of design so that later re-design is avoided. . When there is apparent contradiction, in consultation with the licensing authority, the standards deemed more restrictive shall apply.

5.1 Criteria for Center Location

The location of the child care center is critical to a child's safety, well being, and quality of care. Location requirements can be grouped according to the following broad categories of mandatory and recommended criteria: Enrollment, space, environment, safety, security, accessibility, and historic preservation. For further detailed information on these categories, refer to Chapter 10 of this document. When a center is subject to an individual state's licensing standards which are more restrictive than the criteria listed below, the state licensing standards shall govern.

5.2 GSA Child Care Center Enrollment Capacity

For programming purposes, a typical center should be designed to serve no fewer than 74 children because fewer than that may be financially difficult for commercial providers to sustain, and may hasten future turn-over of providers. Though the typical center is approximately 74 children, there are several existing centers in the GSA system which are substantially smaller or larger than this standard.

At the same time, centers should not exceed 150 children, unless they are designed as "pods" that can avoid the feeling of an overwhelming institutional impression for small children. Large

centers that are not expressed as small components can engender exactly the institutional environment that GSA seeks to avoid. If a center needs to serve more than 150, approval of the RCCC is required.

5.3 Space Measurement Terms

The Guide states requirements in terms of Occupiable Floor Area (OFA) and Actual Floor Area (AFA). Floor area assignment for child care centers will be calculated according to the current edition of the *Federal Property Management Regulations (FPMR 101-17)*, *Assignment and Utilization of Space*. Please refer to the Glossary of the Guide and the FPMR for a more complete definition of terms and policies relating to assignment of space within Federal properties.

- Gross Floor Area (GFA) refers to the total area of all floors of a building including main building lobbies, elevator shafts, egress stairwells and exterior partitions measured to the exterior side of the exterior wall.
- Occupiable Floor Area (OFA) refers to the portion of the building occupied by a tenant. In the case of a child care center, it includes Actual Floor Area (AFA), circulation, and constructed elements. This is the amount of space for which agencies are charged rent.
- Actual Floor Area (AFA) is a term used in the Guide that refers to the area occupied by a center, as measured from inside partitions, doors, and glazing. It includes area required for built-in case goods, fixtures, and equipment.

Figure 5.1: Space Measurement

5.4 Overall Space Requirements

5.4.1 Interior:

- Provide approximately 9.5 m² OFA of interior space per child for the licensed capacity of the center.
- Provide 3.5-4.5 m² AFA of unrestricted space per child in the classroom. This space is exclusive of corridors, administrative space, storage, toilets, kitchen and laundry space, and building service and support areas.

5.4.2 Exterior:

- Provide a minimum of 7 m² of outdoor play yard per child for 50 percent of the licensed capacity of the center. The Play yard space should be divided, with each outdoor area having a minimum dimension of no less than 2440 mm, and a minimum size not less than 112 m². At least 50 percent of the play yard area should be exposed to sunlight at any given time during hours of operation.
- There is also a need for shade in the play yard, plantings, and other shading devices. When play yard areas cannot be provided in compliance with this criteria, the center, with RCCC approval, must provide for access to alternate play areas for large motor skills development. This alternate area may include, but is not limited to, an open courtyard, or an outdoor space such as a nearby public park if allowed by state and local licensing requirements.
- It is desirable in areas of the country with particularly rainy weather, (for instance, the Northwest) to provide covered areas such as generous porches for exterior play. A multiple-purpose area in the center is particularly valuable in areas of the country with inclement winter weather, but interior multipurpose space should not be considered as a substitute for exterior play space.
- See chapter 6 for a full discussion of parking requirements.

5.5 Environmental Quality

5.5.1 Interior:

Natural lighting is essential in child care centers. It is the hallmark of nurturing, quality environments for children. Child care centers must have access to generous amounts of natural light. Recent research has emphasized the importance of natural light to brain development, and natural light should be the primary means of lighting the classroom space, at a minimum, though natural lighting throughout would be the ideal. Locations without any access to natural light should not be used for new child care centers. The absence of natural light may be a prime consideration when contemplating a relocation of an existing center. The designer should

strive to ensure that classroom space faces south if possible, so that the maximum amount and warmth of light is available to the children during their day. In addition:

- When locating a center within an existing building, in no case should classrooms have a window to the exterior area less than 8 percent of the floor area. Artificial light cannot substitute for the quality of natural light. If artificial lighting is needed to enhance natural lighting, it should include a variety of fixture and lighting types with high color rendition. See Chapter 10 for artificial light requirements.
- The designer should strive to have natural lighting coming from at least two directions. Window seats also are an effective way to maximize the effects of natural light.
- Acoustical measures are necessary as discussed in Chapter 10. The center should not be located near noise sources such as major highways, street intersections, railroad lines, or airport flight paths without mitigation. If proximity to high levels of noise is unavoidable, acoustical measures are necessary as discussed in Chapter 10 in order for the RCCC to approve the site.
- Maximum acceptable noise levels are dependent upon the area of the center subjected to the noise and whether the sound is continuous or intermittent. Children, and especially infants, are sensitive to noise particularly unexpected or intermittent loud noise. See Chapter 10 for guidelines on maximum acceptable noise levels.
- The center must not be exposed to fumes or dust emissions from industrial enterprises and operations, transportation vehicles, furnace and incinerator exhaust, mists from cooling towers, or other similar sources. Avoid placing centers near exhausts from food processing, waste handling operations, loading docks, or similar sources of unpleasant odors.
- Locate the center at a site with desirable natural features, such as trees, south facing slopes, and views of natural and pleasant man-made features or interesting urban vistas.
- Locate the center adjacent to other Federal employee services in the building for convenience of the parents, provided that the location is deemed secure from threats.
- Consider the micro-climate when choosing a center location, including wind patterns and solar angles. The selected location should allow outdoor play yard orientation appropriate for local climatic conditions.
- Consider proposed major future construction projects within the building and adjacent to the site. If possible, avoid these locations due to extended disruptive high noise levels and poor air quality.

5.6 Health and Safety

- The building structure must comply with area limitations, mixed-use separation, and construction requirements in PBS-PQ100.1a and other Federal, State, or local codes and standards which apply.

- The center location must provide direct at-grade egress, with a minimum of two means of egress from each floor, if the center is located on two floors.
- The center must be located away from hazardous or dangerous conditions or occupancies. This includes contaminants from hazardous materials such as lead and PCB's. The site, including the playground must be certified as free of these contaminants before design begins. Coordinate with the GSA regional environmental safety office for direction about required testing.
- The location must meet criteria to prevent exposure to Legionella pneumophila.
- The location must allow for the safe arrival and departure of children.
- The location must be free of hazards including fountains, wells, open pools, unprotected ledges, drop-offs and cliffs, and dangerous equipment. Play areas must not have open drainage ditches or openings to storm sewer systems.
- The location must be free of rodents, hazardous insects, vermin and toxic plants.
- The building area occupied by the center should have operable windows arranged to allow ventilation. The designer should exercise design judgment to provide the maximum amount of operable windows up to 25% of those provided, as long as children will not be able to open them themselves, or as long as neither the building mechanical system nor noxious fumes are introduced into the interior. Awning and hopper windows below head-room on the exterior or interior of the building are not to be used.

5.7 Security

- The location must meet requirements established by the GSA Security Risk Assessment which is available through GSA's Federal Protective Service (FPS). The designer and the stakeholders will need to start such fundamental discussions with FPS early in the planning process.
- The center location must be readily identifiable and accessible to emergency response personnel.
- If the FPS security assessment indicates the need for immediate access to building security guards or FPO's, they must be provided. The means of assistance in case of emergency must also be accommodated.
- The location must allow for all exits and entrances to be secured. Normally, movement should be restricted through one main entrance and perhaps an additional service entry. Where possible, maximum visibility of entry points from inside the center should be provided.
- The location must be a defensible space with a secure perimeter and controlled access.

- The security risk assessment may recommend the center entrance be separate from the main building entrance in order to reduce congestion and to address security considerations.
- The security risk assessment may recommend that a guard station should be located near the center so that surveillance of comings and goings to the center are easily seen by posted guards. Alternatively, a form of surveillance may be recommended.

5.8 Approach and Access

- The center's layout must allow for adults with disabilities to use the center. Comprehensive final guidelines for interiors for children have just been released, (see chapter 10). Play yards guidelines are currently being devised, but have yet to be published. RCCC's will be informed when they have been and this information will be available through them at that time. The center must comply with the UFAS (Uniform Federal Accessibility Standards) and ADA (Americans with Disabilities Act). Where there is real or apparent conflict, the center must comply with the more stringent of the two standards.
- The play yard should be directly accessible from the building or as close to the building as practical. If the site cannot support a play yard, a public or a private park within walking distance may be used, if approved by the RCCC.
- Avoid locating a center close to busy streets and intersections, if possible. If not, then the designer must devise mitigation measures, such as bollards, to lessen the effect of congestion and to increase safety, especially at playgrounds near busy intersections. Intersections where there is a heavy volume of traffic require particular attention.
- The center location should provide ease of short-term (drop-off) parking for parents as they bring their children to the center or take them home. There should be close proximity and direct circulation between short-term parking and the entrance to the center. Sufficient parking spaces are needed to allow parents time for brief conversations with teachers. This parking is to be as close to the center as possible and as consistent with the FPS Risk Assessment.
- If possible, the center location should be within walking distance of public transportation.
- The center location should be within walking distance of the work place and Federal transportation.
- Ideally, each play yard should have direct access from the classroom.

5.9 Historic Preservation

The decision to locate a center in a National Historic Building must take into consideration the historic preservation requirements outlined in the PBS-PQ100.1a. If located in a historic building, the GSA Region's office responsible for historic preservation must be contacted and made a part of the process at an early stage of planning the center. Playground location is also a vital consideration in assessing the effect of the center location on historic structures or neighborhoods.

5.10 Space Types

The following terms will be used throughout the Guide to identify and define the major spaces within the center and group them according to the users:

5.11 Children's Spaces

5.11.1 Classrooms:

A classroom is the architecturally defined area that contains each group of children and their teacher(s). Classrooms may be separated by full partitions or partial barriers that allow controlled visual or acoustical connections to other groups. However, interior viewing windows, particularly at children's height, are required both adjacent to corridors and between classrooms. The classrooms themselves should be as open as possible, allowing supervision and the penetration of natural light. The classroom contains the required spaces for all recommended activities, as well as spaces for personal care. Adequate space is also necessary for storing children's and teacher's personal items, curriculum materials, supplies, and equipment. Space should conform to NAEYC accreditation and local licensing requirements.

5.11.2 Common Spaces:

Spaces shared by more than one group are included in this category. The designer needs to be cognizant that the child may spend very few hours of the day in his or her home: The center becomes the "home away from home" for the child. The design should convey this impression. A common area that "feels" like the core of the center is an excellent organizing concept and one which will dispel an institutional feeling, especially if it is treated in a "home-like" way. This may be simply an area of the circulation that allows a stopping place that allows social interaction. However, it should not be the multi-purpose room. Circulation through the multi-purpose has proved to be an undesirable design feature.

Other common areas may consist of one or more of the following: multiple-purpose area, large motor activity area, meeting/gathering area, and a separate sick bay (if the latter is required to meet local licensing requirements).

5.11.3 Play Yards:

Play yards are outdoor extensions of the classrooms, providing many of the same opportunities as indoor spaces. Play yards should provide for a variety of developmentally appropriate activities and include storage for curriculum equipment as well as wheeled toys, trikes and

wagons. Spending time on the playground is undoubtedly the preferred activity of children. Therefore, to the greatest extent possible, the designer should arrange ease of access to the playground from the classroom.

5.12 Adult Spaces

5.12.1 Parent Spaces:

Spaces within the center that are used by parents include the entry, reception/"living room" area, conference room, and the classroom (for observing, visiting, conferring with teachers, and feeding infants). Parents should have direct access to a staff toilet room.

5.12.2 Staff Spaces:

The spaces required for teachers and directors include the classroom and play yard areas, the entry and reception areas, offices, conference and lounge spaces, resource storage, and adult toilets.

5.12.3 Service Spaces:

The spaces allocated for service and support to the center include the kitchen and food storage, laundry, janitor's closet, as well as the electrical/mechanical, and telephone service equipment room.

5.12.4 Circulation:

This term applies to the space dedicated to major pathways which connect all the interior spaces.

5.13 Example Space Programs

The following tables provide examples of space programs for child care centers with enrollment capacities of 74, 94, and 148 children, respectively. These populations are based upon workable child/staff ratios which also tend to be economically sustainable. Requirements are stated in AFA and OFA per child to allow the user to modify the program to the actual enrollment capacity anticipated for specific projects. The combination of groups for an actual project may vary from those used in these examples, depending upon the needs of the proposed center.

Table 5.1: Example Space Program (74 Children)

Note: See Appendix A for guidance on metric conversion.

<i>Space Title</i>	<i>Unit Size AFA</i>	<i>Unit Size OFA</i>	<i>Total OFA</i>
Staff and Parent Areas			
Public Area			
Vestibule	.05 m ² AFA/Child	4.6 m ²	4.6 m ²
Reception	0.09 m ² AFA/child	+25%	8.3 m ²
Staff Area			
Director's Office	.16 m ² AFA/Child	15.3 m ²	15.3 m ²
Sick Bay (If Required)	.05 m ² AFA/Child	+25%	4.6 m ²
Staff Lounge/Work	0.19 m ² AFA/Child	+25%	17.6 m ²
Parent/Staff Conference	0.14 m ² AFA/Child	+25%	13.0 m ²
Adult Toilet	.06 m ² AFA/Child	5.8 m ²	5.8 m ²
Central Storage	0.14 m ² AFA/Child	+25%	13.0 m ²
<i>Sub-Totals for Staff and Parent Areas</i>		1.11 m ² OFA/Child	82.2 m ²
Service Areas			
Laundry	0.09 m ² AFA/Child	+25%	8.3 m ²
Warming/Central Kitchen	0.28 m ² AFA/Child	+25%	25.9 m ²
Janitor's Closet	3.7 m ² AFA/Child	+25%	4.6 m ²
Telephone Closet	.74 m ² AFA/Child	.93 m ²	.93 m ²
<i>Sub-Totals for Service Areas</i>		.53 m ² OFA/Child	39.73 m ²
Common Spaces			
Multi-purpose/Large Motor Activity, optional, but required in areas of the country with more than 915 mm of annual precipitation or temperatures below -4 degrees Celsius as a normal January daytime high temperature. Should be sized for 20 children minimum.		3.5 OFA/Child	70 m ²
Play yard storage		0.19 m ² OFA/Child	14.1 m ²
<i>Sub-Totals for Common Spaces</i>		1.14 m ² OFA/Child	84.1 m ²
Classrooms			
Infant Areas			
Classroom of 8 Infants		10 m ² OFA/Child	80 m ²
Young Toddler Areas			
Classroom of 12 Younger Toddlers		8.4 m ² OFA/Child	101 m ²
Older Toddler Areas			
Classroom of 14 Older Toddlers		7.4 m ² OFA/Child	103.6 m ²
Pre-School Areas			
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
<i>Sub-Totals for Classroom Spaces</i>		7.62 m ² OFA/Child	564.6 m ²
Total Center OFA		10.4 m² OFA/Child (9.5 m ² OFA/Child)	770.6 m²* (700.6 m ² **)
Exterior covered area, where possible			70 m ²
* with multipurpose room included			
** without multipurpose room			

Table 5.2: Example Space Program (94 Children)

See Appendix A for guidance on metric conversion.

<i>Space Title</i>	<i>Unit Size AFA</i>	<i>Unit Size OFA</i>	<i>Total OFA</i>
Staff and Parent Areas			
Public Area			
Vestibule	.05 m ² AFA/Child	5.8 m ²	5.8 m ²
Reception	.09 m ² AFA/Child	+25%	10.6 m ²
Staff Area			
Director's Office	.16 m ² AFA/Child	19.4 m ²	19.4 m ²
Assistant's Workstation			
(In Centers over 80 Children)	.08 m ² AFA/Child	9.3 m ²	9.3 m ²
Sick Bay (If Required)	7.4 m ² AFA/Child	+25%	9.3 m ²
Staff Lounge/Work	0.19 m ² AFA/Child	+25%	22.3 m ²
Parent/Staff Conference	0.14 m ² AFA/Child	+25%	16.5 m ²
Adult Toilet	.06 m ² AFA/Child	7.4 m ²	7.4 m ²
Central Storage	0.14 m ² AFA/Child	+25%	16.5 m ²
<i>Sub-Totals for Staff and Parent Areas</i>		1.2 m ² OFA/Child	117.1 m ²
Service Areas			
Laundry	0.09 AFA/Child	+25%	10.6 m ²
Warming/Central Kitchen	0.28 m ² AFA/Child	+25%	32.9 m ²
Janitor's Closet	1.0 m ² AFA/Child	+25%	9.3 m ²
Telephone Closet	.74 m ² AFA/Child	.93 m ²	.93 m ²
<i>Sub-Totals for Service Areas</i>		0.57 m ² OFA/Child	53.83 m ²
Common Spaces			
Multi-purpose/Large Motor Activity, optional, but required in areas of the country with more than 915 mm of annual precipitation or temperatures below -4 degrees Celsius as a normal January daytime high temperature. Should be sized for 20 children minimum.		3.5 OFA/Child	70 m ²
Play yard storage		0.19 m ² OFA/Child	17.9 m ²
<i>Sub-Totals for Common Spaces</i>		.93 m ² OFA/Child	87.9 m ²
Classrooms			
Infant Areas			
Classroom of 8 Infants		10 m ² OFA/Child	80 m ²
Younger Toddler Areas			
Classroom of 12 Younger Toddlers		8.4 m ² OFA/Child	101 m ²
Older Toddler Areas			
Classroom of 14 Older Toddlers		7.4 m ² OFA/Child	103.6 m ²
Pre-School Areas			
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
After-School Areas			
Classroom of 20 After-School Children		7 m ² OFA/Child	140 m ²
<i>Sub-Totals for Classroom Spaces</i>		7.5 m ² OFA/Child	704.6 m ²
Total Center OFA		10.24 m² OFA/Child	963.3 m²
		(9.5 m ² OFA/Child)	(893.3 m ² *)
Exterior covered area, where possible			70 m ²

*with multipurpose room included

** without multipurpose room

Table 5.3: Example Space Program (148 Children)

See Appendix A for guidance on metric conversion.

<i>Space Title</i>	<i>Unit Size AFA</i>	<i>Unit Size OFA</i>	<i>Total OFA</i>
Staff and Parent Areas			
Public Area			
Vestibule	.05 m ² AFA/Child	7.4 m ²	7.4 m ²
Reception	0.09 m ² AFA/Child	+25%	16.7 m ²
Staff Area			
Director's Office	.16 m ² AFA/Child	30.6 m ²	30.6 m ²
Assistant's Workstation			
(in Centers over 80 Children)	7.4 m ² AFA/Child	9.3 m ²	9.3 m ²
Sick Bay (If Required)	7.4 m ² AFA/Child	+25%	9.3 m ²
Staff Lounge/Work	0.19 m ² AFA/Child	+25%	35.2 m ²
Parent/Staff Conference	0.14 m ² AFA/Child	+25%	25.9 m ²
Adult Toilet	.06 m ² AFA/Child	11.2 m ²	11.2 m ²
Central Storage	0.14 m ² AFA/Child	+25%	25.9 m ²
<i>Sub-Totals for Staff and Parent Areas</i>		1.1 m ² OFA/Child	171.5 m ²
Service Areas			
Laundry	0.09 m ² AFA/Child	+25%	16.7 m ²
Warming/Central Kitchen	0.28 m ² AFA/Child	+25%	51.8 m ²
Janitor's Closet	1.0 m ² AFA/Child	+25%	9.3 m ²
Telephone Closet	.01 m ² AFA/Child	.93 m ²	.93 m ²
<i>Sub-Totals for Service Areas</i>		0.57 m ² OFA/Child	84.7 m ²
Common Spaces			
2 Multi-purpose/Large Motor Activity, optional, but required in areas of the country with more than 915 mm of annual precipitation or temperatures below -4 degrees Celsius as a normal January daytime high temperature.		In a 148 child center two multi-purpose rooms are recommended, each sized for 20 children minimum.	
		3.5 OFA/Child	140 m ²
Play yard storage		0.19 m ² OFA/Child	28.1 m ²
<i>Sub-Totals for Common Spaces</i>		1.2 m ² OFA/Child	168.1 m ²
Classrooms			
Infant Areas			
Classroom of 8 Infants		10 m ² OFA/Child	80 m ²
Classroom of 8 Infants		10 m ² OFA/Child	80 m ²
Younger Toddler Areas			
Classroom of 12 Younger Toddlers		8.4 m ² OFA/Child	101 m ²
Classroom of 12 Younger Toddlers		8.4 m ² OFA/Child	101 m ²
Older Toddler Areas			
Classroom of 14 Older Toddlers		7.4 m ² OFA/Child	103.6 m ²
Classroom of 14 Older Toddlers		7.4 m ² OFA/Child	103.6 m ²
Pre-School Areas			
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
Classroom of 20 Pre-School Children		7 m ² OFA/Child	140 m ²
After-School Areas			
Classroom of 20 After-School Children		7 m ² OFA/Child	140 m ²
<i>Sub-Totals for Classroom Spaces</i>		7.63 m ² OFA/Child	1129.2 m ²
Total Center OFA		10.4 m² OFA/Child (10 m ² OFA/Child)	1547 m^{2*} (1477 m ^{2**})
Exterior covered area, where possible			70 m ²

* with multipurpose room included

** without multipurpose room

Table 5.4: Example Classroom Space Requirements

Note: . See Appendix A for guidance on metric conversion.

<i>Space Title</i>	<i>Unit Size AFA</i>	<i>Unit Size OFA</i>	<i>Total OFA</i>	<i>Notes</i>
Infant Areas				
Classroom of 8 Infants				
Activity Area	.053 m ² AFA/Infant	+25%	23.0 m ²	
Support Areas				
Cubby Storage	0.56 m ² AFA/Infant	+25%	5.6 m ²	
Food Preparation	2.79 m ²	3.5 m ²	3.5 m ²	
Eating/Table Area	3.7 m ²	4.6 m ²	4.6 m ²	
Nursing	1.86 m ²	2.3 m ²	2.3 m ²	
Sleeping	2.79 m ² AFA/Infant	+25%	27.9 m ²	
Diapering Station and Storage	3.7 m ²	4.6 m ²	4.6 m ²	
Adult Toilet	4.6 m ²	5.8 m ²	5.8 m ²	
Storage	0.28 m ² AFA/Infant	+25%	2.8 m ²	
<i>Sub-Totals for Infant Areas</i>		10 m ² OFA/Child	80.0 m ²	
Younger Toddler Areas				
Classroom of 12 Younger Toddlers				
Activity Area	4.2 m ² AFA/Child	+25%	63.0 m ²	
Support Areas				
Cubby Storage	0.56 m ² AFA/Child	+25%	8.4 m ²	
Food Preparation	2.8 m ²	3.5 m ²	3.5 m ²	
Napping	4.1 m ²	5.1 m ²	5.1 m ²	
Hand washing Sink	1.86 m ² AFA/Sink	4.7 m ²	4.7 m ²	(2 Sinks)
Toddler Toilet	2.8 m ² AFA/Toilet	7 m ²	7.0 m ²	(2 Toilets)
Diapering Station and Storage	3.7 m ²	4.6 m ²	4.6 m ²	
Storage	0.28 m ² AFA/Child	+25%	4.2 m ²	
<i>Sub-Totals for Younger Toddler Areas</i>		8.4 m ² OFA/Child	100.8 m ²	
Older Toddler Areas				
Classroom of 14 Older Toddlers				
Activity Area	4.2 m ² AFA/Child	+25%	75.2 m ²	
Support Areas				
Cubby Storage	0.56 m ² AFA/Child	+25%	9.7 m ²	
Children's Art Sink	1.86 m ²	2.3 m ²	2.3 m ²	
Children's Sink	1.86 m ² AFA/Sink	4.7 m ²	4.7 m ²	Handwashing (2 Sinks)
Children's Toilet	2.8 m ² AFA/Toilet	7 m ²	7.0 m ²	(2 Toilets)
Diapering Station and Storage	3.7 m ²	4.6 m ²	4.6 m ²	
Storage	0.28 AFA/Child	+25%	4.9 m ²	
<i>Sub-Totals for Older Toddler Areas</i>		7.7 m ² OFA/Child	108.2 m ²	

Table 5.4: Example Classroom Space Requirements (Contd.)

Note: See Appendix A for guidance on metric conversion.

<i>Space Title</i>	<i>Unit Size AFA</i>	<i>Unit Size OFA</i>	<i>Total OFA</i>	<i>Notes</i>
Pre-School Areas				
Classroom of 20 Pre-School Children				
Activity Area	4.2 m ² AFA/Child	+25%	105 m ²	
Support Areas				
Cubby Storage	0.56 m ² AFA/Child	+25%	14 m ²	
Children's Art Sink	1.86 m ²	2.3 m ²	2.3 m ²	
Children's Handwashing Sink	1.86 m ² AFA/Sink	4.7 m ²	4.7 m ²	(2 Sinks)
Children's Toilet	2.8 m ² AFA/Toilet	7 m ²	7.0 m ²	(2 Toilets)
Storage	0.28 m ² AFA/Child	+25%	7.0 m ²	
<i>Sub-Totals for Pre-School Areas</i>		7 m ² OFA/Child	140 m ²	
After-School Areas				
Classroom of 20 After-School Children				
Activity Area	4.2 m ² AFA/Child	+25%	105 m ²	
Support Areas				
Lockers	0.56 m ² AFA/Child	+25%	14 m ²	
Children's Art Sink	1.86 m ²	2.5 m ²	2.4 m ²	
Boys Toilet with Sinks	4.6 m ²	5.8 m ²	5.8 m ²	
Girls Toilet with Sinks	4.6 m ²	5.8 m ²	5.8 m ²	
Storage	0.28 m ² AFA/Child	+25%	7.0 m ²	
<i>Sub-Totals for After-School Areas</i>		7 m ² OFA/Child	140 m ²	

CHAPTER 6:

SITE DESIGN

This chapter provides concepts and criteria for site design and design of the play yards. It identifies the general types of outdoor areas required, discusses the relationships of these areas to other outdoor and indoor spaces, and provides detailed criteria for materials, features, furnishings, and equipment required in these spaces.

6.1 Concepts for Site Design

The conceptual site design for child care centers must be integrated into the design of the overall site, including vehicular and pedestrian movement, parking, entry, service points, and constructed or landscape features.

The site must be designed according to general site design principles contained in the latest edition of PBS-PQ100.1a including orientation, grading and landscape form, aesthetics, construction, plant material selection, lighting, signage, and amenities. Before the site for the center and its playground are selected, the soil must be tested for the presence of dangerous contaminants such as lead and PCB's. Coordinate with, and follow the direction of the GSA regional environmental safety personnel to ensure that the site is environmentally safe for children. The site should continue to be monitored, as per the direction of the environmental safety staff, to ensure that it does not become subsequently contaminated, especially by lead. This is particularly a concern in urban areas or where there is a heavy concentration of automobiles or industrial facilities. Also proposed playground locations adjacent to old structures which may be painted with lead paint or contain other hazards should be investigated.

Five conceptual areas of site design relating to child care centers include: a) Entry and Circulation; b) Parking; c) Service; d) Safety and security; and e) Play Yards.

6.1.1 Context:

A word is in order to underscore the paramount importance of considering the context in which the center and its associated playground are located. The designer must realize that the building is rarely an object alone. Rather, the primary objective of the site and exterior design should be to enhance the existing context. This is an essential good neighbor action for the Federal Government. This aspect of the design must be addressed at the concept level.

6.2 Entry & Circulation

6.2.1 Entry Approach:

The design of the center should incorporate a point of reference or landmark that serves as a welcome and a transition. The center entrance should be separated from the main entrances to

the building and to service areas, if possible. This may be a requirement of the FPS risk assessment and should be coordinated at the beginning of the design process.

A transition, such as a porch, is very desirable at the main entry. This might be combined with a covered walkway, for instance, to connect with short-term parking, to protect arriving children and parents from inclement weather.

In cold climates, there must be a canopy (or a recess) at required egress doors to ensure that doors can completely open without obstruction from snow and ice. Drop-off areas must be arranged so that a child and adult may exit the vehicle from the pedestrian side and proceed directly to the center without crossing traffic or crossing in front of, or behind vehicles.

6.2.2 Parking:

Short-term parking should be provided for parents bringing their children to the center. There must be accommodation for the disabled to park in this area. A sufficient number of parking spaces are needed to allow parents time for brief conversations with teachers while they are in the center. Short-term parking for the center should be separated from other tenant parking and located as close to the center as possible. However, its location must also be consistent with security as defined by the FPS risk assessment of the site.

The arrangement should minimize the risk to pedestrians and allow safe flow of vehicles through the area. The parking should never be arranged in a way that forces children or persons in wheelchairs to proceed behind parked cars. Such an arrangement may mean that a driver is unable to see such pedestrians when backing up. Walkways in front of vehicles must be protected by tire guards, bollards or some other means to prevent any portion of a vehicle from advancing into the walkway zones.

Locate the parking away from busy intersections or vehicle circulation routes.

For emergency purposes, at least one parking space, typically for the center director's use must be provided as near to the center entrance as possible. If Federal employee parking is provided at the building, allow one parking space for each child care center employee for every ten children of center capacity. Disabled employees must be accommodated with a properly sized parking space(s) as near the center as possible.

As the site configuration and location allow, the employee parking spaces should be located as near the center as possible for ease of access and for safety. (It should be noted that in winter months particularly, staff members may be required to leave the center after dark, when most other employees will have already left the premises.) Ideally, an unobstructed line of sight should be provided between the interior of the center director's office through the center entrance and into the short term parking.

At a minimum, two permanent parking spaces will be assigned to the child care center. Note that in rare cases, permanent parking will not be available. If two permanent spaces cannot be provided, approval must be obtained from the RCCC in order to waive the requirement. This does not change the need for identifying reserved parking space as near the center as possible.

6.2.3 Service:

Service access to a center will typically make use of the main building dock space and service access if the main building provides these areas. In some situations, a center must provide its own service access, though a complete dock may not be necessary. Note that each center must have a minimum of two egress points, of which at least one should be designated as a service entry, separate from the main entry. Service access for sanitation removal, food and supply delivery, and small van deliveries, if these are not provided by the main building, should be separated from short-term and staff parking. Likewise, a sanitation dumpster with screening may be necessary if this service is not provided by the main building. Two service parking spaces are desirable to avoid conflicts in deliveries if possible in the context where the center is located.

6.2.4 Security:

A prime area of concern in the establishment of a child care center is security and the design team must coordinate with local representatives of GSA's Federal Protective Service about its recommendations at the earliest stages of planning and design. These early security decisions are critical and the regional child care coordinator must be included in these discussions.

The center should be separated from public areas by buffer zones and barriers, such as fences or screens, particularly in high-security-risk areas. The designer may create buffer zones with open turf areas, or with rows of trees, perimeter hedges, or berms, or any combination of these. Buffer zones are useful because they offer the center staff the time to observe individuals as they approach the center through the buffer zone. In addition, they help shield children from unwanted wind, noise, and other disruptions. The center location and local conditions may necessitate the use of fences and screens to block views from outside the center. These must be sensitively designed to enhance the way the center relates to its context.

6.3 Concepts for Play Yard Design

The activity spaces provided for children in play yards are largely determined by the initial landscape architectural features incorporated into the play yard. Individual play areas within the overall play yard should offer a range of developmentally appropriate activities for social, emotional, intellectual, and physical development. All play areas must be designed according to the guidelines set forth in the most recent publication of the *Handbook for Public Playground Safety* by the US Consumer Product Safety Commission.

Play yards should serve as extensions of classroom spaces, especially where temperate climate allows an easy flow of children and staff into the exterior space on a regular basis. Play yards should be integrated, to the greatest extent possible, into the overall design of the center. Within a central play yard, separate play areas are recommended for each age group of children.

Some states *require* a separate fenced play yard for infants and toddlers. Even without such complete separation, individual play areas within the overall play yard can be developed to serve each of the following age classifications:

- Infant
- Toddlers
- Pre-school
- School-age

Within the play areas, spaces should be developed to support and promote each of the following activity types:

- Sand/Water Play
- Dramatic Play
- Large Motor Play (Climbing / Wheeled Toys)

In addition, provide equipment storage that is directly accessible from the play yard.

6.4 General Design Concept

Areas within the play yards should be zoned by activity type, age group and landscape character. Play areas for infants and toddlers must be physically separated from play areas for older children while retaining some visual tie. Typically, fencing with no sharp edges is to be used to separate the play areas. It should terminate 1000mm above the ground below any portion of it should be visually compatible with the perimeter fence or wall. The tops of fencing and spacing of pickets must present no hazard to children or adults. Tops of fence pickets must terminate at a horizontal member to protect against puncturing hazards. No horizontal elements that could be used as a ladder are to be included in the design of the fence. Walls adjacent to playgrounds must also not be able to be used for climbing so that children could leave the center or injure themselves in a fall.

6.4.1 Location:

Activity areas within the play yard should be placed near an element that can be used as a point of reference by both children and teachers as they move throughout the different play areas. Entrance points, transition and staging areas, storage facilities, seating areas, overhead structures, trees, gathering areas, and larger play structures may all function as points of reference or landmarks within the play yard.

6.4.2 Separation:

Specific play areas may be defined by several elements. Elements include circulation paths, barriers, screens, structures, play equipment, plantings, landscape forms, grade changes, and open buffer areas. Separation of one play area from another should be subtle, leaving some visual, audible, and physical connections intact. Infant/toddler play yards must have a physical separation from preschoolers, for instance, a 915 mm picket fence with rounded corners and no splinters would be an appropriate delineation.

6.4.3 Transitions:

The link between interior and exterior spaces may be a transitional area such as decks, or open vestibules. Transitional areas allow for a blend of interior and exterior environments, and can function as a point of departure or staging area for playground excursions.

6.4.4 Porches:

These are desirable elements, particularly in areas which have weather that can be problematic for outdoor play, such as the Northwest with its abundant rainfall, or the Great Lakes region with its abundant snow. Porches easily lend themselves to nurturing activities and can be valuable for use on days when the weather will not permit full use of the playground.

In areas with moderate temperatures for much of the year, such as Southern California, porches can be used as activity areas for virtually the entire year. Porches are the architectural symbol par excellence of a nurturing environment and provide a transition to the natural elements which children often miss. They are also substantially less expensive than interior, conditioned space.

6.4.5 Shade:

Provide shaded areas in play yards, but allow at least 50 percent of the play yard to be exposed to direct sunlight.

6.4.6 Circulation:

Circulation within the play yard should branch throughout the various play areas, moving through the play yard. Dedicated pathways and routes should be provided for play with wheeled toys. The circulation pathway is the primary element that can tie the entire play yard together.

The play yard must have a minimum of two access points, one from the classroom into the play yard, and one from the play yard outside to the site. The access point from the play yard to the site beyond must allow the retrieval of play equipment (balls, etc.). The design must accommodate the movement of maintenance equipment into the play yard, and allow an emergency exit. All access points to the play yard must be controlled and readily visible for security purposes. The design of the playground should accommodate the movement of disabled children and adults through the play yard to the play events.

6.4.7 Site Furniture:

Provide seating in a shaded area with views to other areas of the play yard. Children and teachers may sit and observe the activities of the play yard. Children may talk with each other or with their teachers in a relaxed fashion or perhaps have a story read to them by the teacher. Tables and chairs, a bench, or a picnic table may be furnished, allowing children, and occasionally parents, to eat their lunch or snack, or to occupy themselves with drawing and other activities. Easels for open air painting are very desirable and help to “soften” the feeling of centers whose surroundings may not easily promote the impression of a natural environment. Provide adequate approach and fall zones for equipment and furniture, as prescribed by the current edition of *Handbook for Public Playground Safety*, issued by the Consumer Product Safety Commission.

6.4.8 Storage:

Storage facilities should be easily discernible and have a unique, easily understood symbol indicating the contents. Storage facilities provide an opportunity for children to learn organization and cooperation skills. Children acquire a sense of responsibility by learning to return toys and tools under the direction of the caregiver, to the correct storage areas when they are finished playing.

There must be visibility into the storage area. Exterior storage must be equipped with locks that operate at the exterior of the door but will not allow children to be trapped inside the structure.

6.5 Types of Outdoor Play Areas

6.5.1 Sand and Water Play:

Sand and water play facilities allow children to pretend and project their ideas in a real, physical way. The facilities enhance children's abilities for make believe play, and to farther develop social skills. Sand and water play must be accessible to children. Sand and water tables should have play surfaces at children's height, allowing them to dip out a portion of sand or water onto a stable surface. Allow play space and storage for props such as spoons, shovels, pails, plastic vehicles and animals, containers, and buckets. These props add greatly to the quality of play experiences. The need for a child scaled drinking fountain on the playground should be determined during design. In particularly warm areas there will be a greater need for water fountains. In addition, provide a hose bib connection for water play and filling wading pools, located to be accessible from the circulation path. It is also desirable to emphasize the source of the water, making it a design "event", a symbolically important part of the play yard.

6.5.2 Dramatic Play:

Dramatic play is the most dynamic activity in the play yard, often using many different areas of the play yard as stage settings. Ample opportunities should be provided, allowing children to engage in role playing and make believe activities. Playhouse structures should have seating. Adequate play areas and storage should be provided to allow use of a wide variety of props. These items include elements such as boards, scrap lumber, dress-up clothes, cooking utensils, tarpaulin, banners, signs, and other items that help ensure the high quality of dramatic play. The props should be easily moved and incorporated into play activities. The dramatic play area should be adjacent to and incorporate paths and parking areas for wheeled toys. Change of level greatly enhances the quality of dramatic play as it allows for a "king of the mountain" experience which is a universally popular theme in children's play.

6.5.3 Large Motor Play:

Large motor play areas provide for the physical development of children. These areas should offer opportunities for climbing and riding wheeled toys, as well as running, jumping, sliding, and balancing. Fixed equipment such as a superstructure play piece, and slides encourage children to explore the limits of their physical abilities through varying levels of difficulty and challenge. Berms that create small hills also provide challenge, and are cost effective. They

also provide visual interest and can help add a needed connection to nature.

The degree of difficulty, challenge, or risk must be obvious to children involved in any given activity. Recognizable challenge or risk is good, but hidden or unforeseen risk is dangerous and often results in injuries. For this reason, the play yard should not contain metal slides, (which can burn children when they become hot); enclosed tunnel slides, (which make observation difficult and can allow one climbing child above the enclosed tunnel to fall on top of another at the tunnel exit) traditional see-saws, (which can result in injuries when one child unexpectedly jumps off of it) or spring toys (which can “brain” a child as he or she walks by the relatively heavy, moving toy).

Small berms and hills, large rocks, stumps, trees or bushes provide settings and obstacles for children to climb over, jump on, dodge around, or hide behind. All of these present desirable challenges. Play with wheeled toys, such as tricycles and wagons helps develop coordination and physical strength. The large space required for these activities and the boisterous character of this play dictate that this area be situated away from quieter ones. Because local licensing has a wide range of interpretation of appropriate playground design, obtaining their “buy-in” to the design concept as soon as possible is very important.

Play areas should be made accessible to children with disabilities. This means that children with disabilities should be able to reach the play equipment to benefit from the interaction that occurs there. As of this writing, this aspect of play is currently under study by the Department of Justice. The RCCC’s will be made aware of any changes in requirements for playground design for the disabled, and the designer should inquire about the status of these regulations before the playground design begins.

To provide a safe environment that still allows gross motor activity, the movement of the children themselves rather than equipment is key. In addition, the following elements are not to be used in GSA playgrounds as they have found to be unsafe in the group care setting:

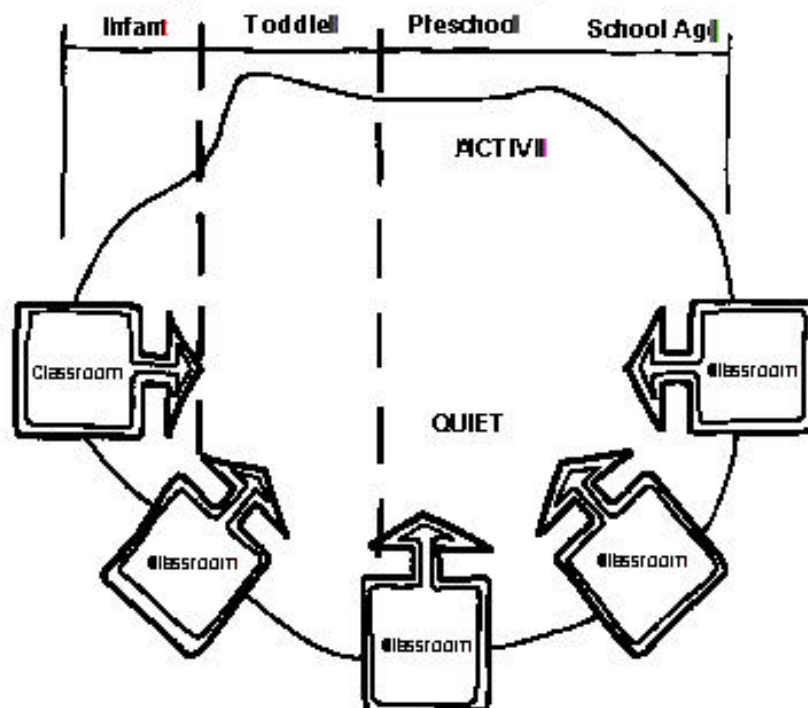
- Metal slides
- Enclosed tunnel slides
- Seesaws
- Spring mounted, rocking toys
- Swings

6.6 Play Yards for Different Age Groups

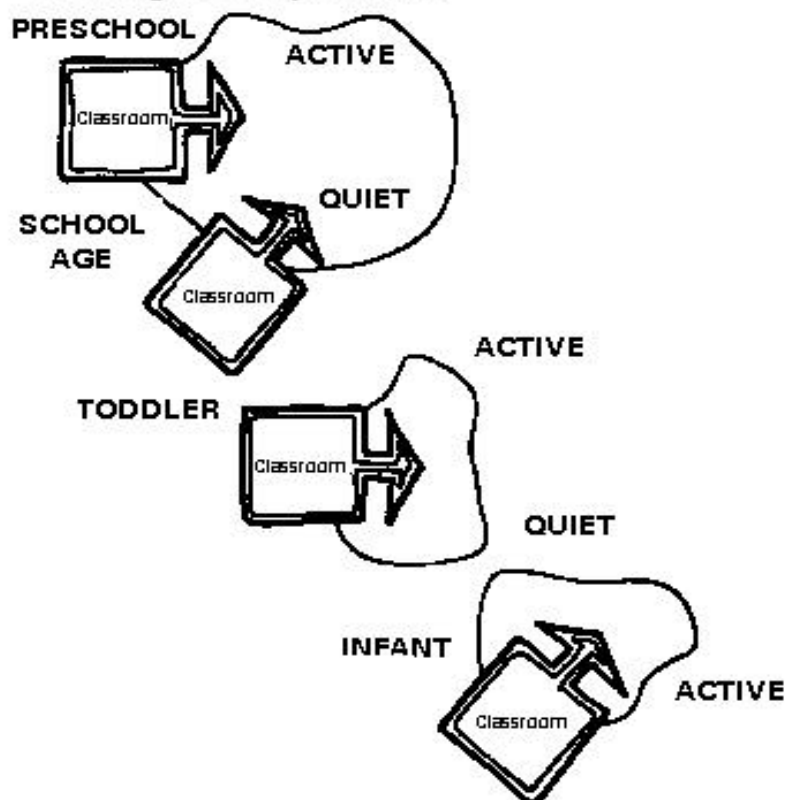
6.6.1 Infant Outdoor Play Areas:

Play areas for infants require special design considerations. Separate spaces for infants should be near toddler play areas, providing visual and audible connections and limited physical contact. Ideally, infant play areas should be exposed to the natural environment, though shielded from the extremes of wind and sun.

Figure 6.1: One Play Yard



*Figure 6.2:
Multiple Play Yards*



Infant play area surfaces should consist of soft, resilient materials that protect crawling children and provide a comfortable surface on which they can sit. Soft surfaces should have different textures and (not garish) colors denoting changes in activities and challenges. Developmentally appropriate challenges should be situated within bounded areas or behind slight barriers requiring mastery before the child may venture into the next area. These challenges could take the form of crawling spaces with slight inclines or undulations, low, easy to cross barriers or berms, pull up bars, and low platforms and slides. There must be some surface that is hard enough to allow the use of wheeled and push toys.

6.6.2 Toddler Outdoor Play Areas:

Toddlers should have play areas for walking, jumping, climbing, running, drawing, painting, block play, group play, sorting, and exploring. The toddler play environment should allow for a wide range of movement and stimulate the senses through the novelty and variety of challenges. Simple, versatile climbing equipment is more appropriate for toddlers than scaled down versions of older children's play structures. Toddlers crave and enjoy semi-enclosed spaces such as small play houses or climb-through tunnels. Other favorite play equipment for toddlers includes small slides. Toddlers seek out experiences with motion or movement. All play structures in toddler areas must be surrounded by a resilient surface. A variety of surfaces and materials should be provided including sand and dirt, pavement, and open grassy areas where toddlers can use an abundance of play objects. When combined with toys, sand becomes a major resource for toddler play. There must be hard surface areas and paths that support wheeled toy play.

6.6.3 Pre-School Outdoor Play Areas:

Play areas for pre-school children should support dramatic and constructive/creative play, active and quiet play, sand and water play, with opportunities to explore nature. Pre-school children regularly interact, socialize, discuss, and negotiate. At this age, they begin to engage in socio-dramatic play. Running, jumping, climbing, and swinging are all important activities, but are often pursued in the context of a make believe setting. A larger, open-ended play superstructure offering many activities should be provided, but be designed to lend itself to dramatic play. There should be elements such as playhouses, stages, and props that encourage dramatic play. These elements should be positioned within the play area to allow the dramatic play to spill out and flow into other spaces. Pathways for wheeled toys also provide circulation and allow the play experience to flow through the play areas. Facilities for play with sand and water should be included and placed adjacent to one another allowing these activities to intermingle. Materials for creative play activities such as musical devices, painting materials, chalkboards, construction materials, and blocks also should be included. If there is a covered porch area, it is ideal for painting, drawing, etc. Generally, for best motor activity in a group care setting, the children should be moving, not the equipment. While tire swings are appropriate, standard swings are too problematic in group care to warrant their inclusion.

6.6.4 School-Age Outdoor Play Areas:

Play areas for school-age children should be separate, but linked to the play areas of younger children. School-age children must have structures and spaces that allow them to exhibit and practice their more advanced physical and social skills. Running, jumping, and climbing activities are supplemented by more athletic pursuits such as sports and games. Most children of

this age have the physical ability to roller skate and ride bicycles. Quiet, semi-enclosed areas should be provided for socializing, completion of homework, or quiet contemplation. School-age children should be exposed to the same activities as the younger children in the center, such as sand and water play, construction activities, music, and artistic pursuits such as drawing or painting.

6.7 Specific Site Technical Criteria

6.7.1 Fences and Enclosures:

- Play yards must be enclosed by fences to define the play yard, allow ease of supervision of children, and protect them from unauthorized individuals or stray animals. The design of the fence is one of the most visible elements in the center and the design of the fence must be more than simply utilitarian. In general, chain link is discouraged. The only kind of chain link that may be used is dark vinyl-coated. Exposed galvanized wire, which has a highly institutional appearance, is not appropriate. It must also have no sharp exposed connections accessible to children.
- Provide bollards, raised planters or other devices to keep automobiles from veering into the play yard area.
- The transparent or opaque nature of the fence and fence height will depend upon the location and environmental conditions of the center and the requirements identified by the GSA security risk assessment.
- It is important that fences be designed so that there are no spaces between pickets which are between 87 mm and 228 mm to prevent children's heads from being entrapped. Fence openings less than 87 mm must be large enough to prevent finger or hand entrapment, but not so small that fingers and hands cannot penetrate the opening. There shall be no openings between 9mm and 25mm. These entrapment dimensions are very important and should receive particular care. Reference the most recent edition of the *Handbook for Public Playground Safety* of the CPSC.
- The perimeter of the play yard must be enclosed by a 1830 mm high fence when views into the play yard are allowed. As an alternative, a shorter fence with planting or landscape features planted or positioned in such a way that an adult would not be able to reach over the fence will be acceptable upon approval of the RCCC.
- When the play yard is adjacent to hazards, busy roadways, or is in a high security risk neighborhood, the perimeter of the play yard must be enclosed by an 2440 mm high fence. Views from the play yard should be screened either by the fence itself or with plants or other suitable device. Bollards, raised planters or other devices should be used to protect play yards located next to driveways or roads where cars could swerve into the play yard area.

- The fence bottom should be a maximum of 76 mm above the ground. Exposed fence bottoms should have a smooth finish for child safety.
- Wood fences should be smooth finished and splinter-free and if treated for exterior use should be guaranteed to be non-toxic.
- Gates must be self-closing and latching. Children's fingers must be protected from pinching or crushing on gate hinge spaces. Each play yard will have a vehicle gate to allow service.
- Fences may be used for protection from the elements and to control sunlight and wind exposure.
- Fences must be safe, with smooth caps and no finials or sharp picket tops on which children might be injured.
- Fences should be designed to discourage climbing, however, as per codes, they must be capable of withstanding code specific force applied horizontally.
- All openings in the fences must be no more than 88 mm wide. To prevent finger entrapment, there must be no openings in the fence between 9 mm and 25 mm wide.
- Fence construction should not use horizontal rails except for the cap and base to prevent climbing.
- All fastening devices used for fence construction should not project outward where they can injure children.

6.7.2 Plant Materials:

All plant materials must be non-toxic. See Appendix B for listing of common toxic and non-toxic plant material. In addition, contact local Agricultural Extension Services for information on toxic or poisonous plants in the local area. Categories of plant hazards include berries, thorns, and plants with toxic leaves, stems, roots, or flowers.

- Plant materials should be used to bring natural elements to the play yard environment.
- The atmosphere of the center can be enlivened by the color, texture, sound, and motion of plant materials.
- Children's ability to observe plant growth is beneficial programatically.
- Plant materials that display seasonal changes are desirable. Visual barriers, screens, and shade and wind protection can be created using plant materials in preference to, or in conjunction with, man-made structures.
- Plant materials should be used to define interesting play areas.

Avoid trees with low hanging limbs if children can use them to climb to unsafe heights or to scale fences.

6.7.3 Dimensions and Clearances:

- Main entrance pathways should be 1830 to 2440 mm wide. All pathways must provide adequate clearances as prescribed by the UFAS and ADA standards. Pathway slopes should be no greater than 1:20 unless they are provided with a handrail. (More than 1:20 is considered a ramp.) Cross slopes will be limited to 1:50.
- Platforms, stairs, handrails on stairs, guardrails, and protective barriers on platforms must be designed in compliance with requirements contained in the latest edition of the *Handbook for Public Playground Safety*, Consumer Product Safety Commission (CPSC). The height of platforms and the age group using the platform will determine when a guardrail or protective barrier is required. Guardrails may be used in platforms at lower heights, while protective barriers must be provided on higher platforms.
- Handrails must be provided to accommodate the intended age group on all stairs (including adults). For children, heights will range between 510 mm above the leading edge of the tread and 915 mm. In certain instances it may be necessary to have two railings mounted at differing heights.
- Guardrails must be provided for infants and toddlers on all platforms greater than 300 mm above adjacent surfaces. Guardrails must be provided for pre-school-age children on all platforms greater than 505 mm above adjacent surfaces. The top of the guardrail must be 765 mm above the platform. The guardrail should not have openings between 87 mm and 228 mm to avoid the possibility of head entrapment. To prevent finger entrapment, there must be no openings in the fence between 9 mm and 25 mm wide.
- Protective barriers must be provided for all children on all platforms greater than 760 mm above adjacent surfaces. The protective barrier must be 740 mm above the platform, with no openings greater than 75 mm. and no horizontal footholds.
- Maximum platform height for infants is 455 mm above adjacent floor level.
- Maximum platform height for toddlers is 915 mm above adjacent floor level.
- Maximum platform height for pre-school children is 1370 mm above adjacent floor level.
- Pathways under trees and constructed elements must have a minimum of 2035 mm headroom.
- There must be a fall zone with a resilient surface under all climbing and moving fixed play equipment from which children could fall as per the current CPSC and local licensing. This is typically 1830 mm radius. Criteria for resilient surfaces are discussed below.
- There must be a 1830 mm clear radius approach zone to all play equipment, not including the fall zone. A tricycle path cannot run through a fall zone area.

6.7.4 Shading:

At least 50 percent of the play area should be exposed to sunlight at any time during the morning and afternoon when the play yard will be used. The degree and orientation of shade depends on local climatic conditions. Shade areas, including porches, gazebos, and other structures, should provide a minimum shaded area of 1832 mm in any direction. Shading structures and materials that may be used include trees, exterior screened rooms, park shelters and structures, awnings, and umbrellas.

6.7.5 Play Yard Surfaces:

Surfaces for play yards, based on their physical properties, can be categorized into three general types: resilient, hard, and grass/turf. A variety of ground surface texture is required in a playground.

6.7.6 Resilient Surfaces:

Resilient surfaces serve to reduce the impact from falls, and are required in specific equipment areas referred to as “fall zones.” Refer to ASTM F-355, *Shock Absorbing Properties of Playing Surface Systems and Materials* and the most recent publication of the Consumer Product Safety Commission’s *Handbook for Public Playground Safety*, for specific requirements concerning these resilient surfaces. Examples of approved resilient surface materials are pre-engineered wood chips, (*not* simply wood mulch), pre-formed rubber matting, and poured-in-place rubberized surfaces. Water needs to drain through these surfaces.

The fall-absorbing abilities of each will depend upon the installed thickness and the method or system of installation. However, whichever type of fall attenuation is used, the CPSC recommendations and requirements must be achieved. These surfaces vary dramatically in cost. The least expensive are the loose fill variety which typically require a much higher level of maintenance to ensure that the required depth is maintained. This trade-off needs to be recognized during the design process. The designer may recommend the more expensive rubberized solutions for ease of maintenance, but should receive written assurances that its impact-absorptive properties are not lessened by exposure to sunlight. Adequate drainage must be provided under any resilient material, including wood chips. A combination of materials such as grass, resilient surface and pre-engineered wood chips, incorporates the advantages of each material and renders a more natural, less institutional appearance than any one alone. The designer should also note the following:

- Organic materials, such as wood chips, bark chips, and processed wood fibers, have good impact-absorbing potential, but require proper maintenance to ensure proper, consistent depth.
- Tire chips have good resiliency and are relatively inexpensive, but can leave black marks on shoes and clothing. They have proven problematic and are not recommended.
- Ensure that manufactured resilient mats will retain slip resistance when wet.
- Artificial turf alone does not have the resiliency for “fall zones” and can be abrasive and convey an ugly, unnatural impression. This material is not recommended for use as a playground surface.

6.7.7 Hard Surfaces:

Hard surfaces should be provided in areas for wheeled riding, and game court areas, and on some all-weather pathways such as for wheelchair access. Hard surfaces are used for their durable, low-maintenance properties. Examples of hard surface materials are concrete, asphalt, stone, or masonry pavers. The durability of each material will vary based on factors such as the method of installation and the thickness of the surface material.

The severity of weather will affect all paving surfaces, but cast-in-place concrete over a well compacted subgrade is the most durable, maintenance-free paving material for hard surface areas, although it should be finished to be non-slip. Asphalt paving is an acceptable alternative to concrete in vehicular areas, but degrades more quickly than concrete. Masonry pavers make a durable surface and have numerous options for patterns. Consider the following:

- The use of pavers may introduce joints and textures in the paving surface that can become uneven over time if they are not laid over a concrete base. Unevenness may present a tripping hazard. Depending on the method of installation, the cost of the surface will vary. Asphalt usually will be the least expensive and stone or masonry pavers the most expensive. Again, it is possible to use a variety of surface configurations and materials to increase the impression of “naturalness” in the play yard. Specifications and supervision to ensure excellent compaction will greatly affect the serviceability of the surface material.
- Materials used for pathways must allow for use during inclement weather. Acceptable materials include concrete, asphalt, stone or masonry pavers, rubberized surfaces, rubber matting, or wood chips. The edge of pathways should not create trip hazards, and may need to be tapered for transitions. Any surface must allow access by those in wheelchairs.
- The main entrance pathway must be paved. Gravel and loose stone are not recommended for any walkway surfaces since children may put them in their mouths or may throw them. Smooth surfaces provided for wheeled toys should not have wider than 12 mm joints because they may cause toys to tip.

6.7.8 Grass/Turf Surfaces:

Grass/turf is desirable for open play areas but is not appropriate in “fall zones.” This surface is seasonal, and is not suitable during periods of rainfall or snow. Exposure to grass/turf allows children to experience natural materials and provides a pleasant texture to play on, but requires constant maintenance and may need an irrigation system. There must be supervised access for maintenance of the play yard by facility maintenance teams.

CHAPTER 7:

INTERIOR SPACE DESIGN

This chapter provides concepts and criteria for the design of the interior spaces within a child care center. Major types of spaces include entry and circulation, staff, classroom, common, and service spaces

7.1 General Information

Spaces within the center can be separated into three major types, including a) the classroom and common use areas used by children; b) the staff areas used by teachers and administrators; and c) the service areas used by people servicing the center. The entry to the center and main circulation pathways unify these areas. Following are descriptions for each space type. See Finish Schedule for finish recommendations:

7.1.1 Entry and Circulation:

The entry includes the transition space, vestibule, and reception area where parents, teachers, children, and visitors enter the facility. The main circulation provides pathways between discreet functional spaces.

7.1.2 Staff Areas:

Staff areas include the director's office, assistant or secretary work space, staff lounge and work area, staff toilet, parent/teacher conference area, and central resource storage.

7.1.3 Classrooms:

Classrooms for infants, toddlers, pre-school children, school-age children, and mixed-age groups of children are specific to the group using the space. These classrooms must have a variety of spaces to support the children's care and developmentally appropriate activities. Architecturally defined spaces within classrooms include the entrance, cubby storage, classroom and teacher storage, diapering station and storage, toileting and hand washing, sleeping, nursing, and food preparation. The classroom should have an art sink, raised areas, and loft areas, and must have open, architecturally unrestricted areas.

7.1.4 Common Areas:

The center may have additional space, typically in a centrally located areas for use by children, teachers, and parents. This is desirable because a one beneficial "by-product" of a child care center can be a stronger sense of community among those who use the center.

The center may also include a multiple-purpose space. The multiple-purpose space may be used as a meeting or gathering area and as a large-motor-activity area. If adequate outdoor play yard space is not available, or if the climate in which the center is located is not conducive

to outdoor play during significant portions of the year, an indoor large-motor-activity area must be provided.

An isolation sick bay, where a child will wait until taken home by a parent is best associated with the center director's office. Where local licensing does not require it to be separate, it should not be completely separate as this may frighten the child. See chapter 10 for ventilation requirements.

7.1.5 Service Spaces:

The center requires space for services including food, laundry, janitorial, and service dock/entrance.

7.1.6 Entrance and Circulation:

These spaces should allow for safe and convenient arrival and departure. The character of the main entry is important in establishing a friendly impression for the children and creating a non-threatening transition from the parent's care to that of the center. Certain features will help promote this desired impression: 1) The entrance door must be glazed with safety glass, affording full visibility for children and adults. 2) Children should be able to see other children in classrooms from the entry to help allay anxiety. 3) If a reception desk is desired for center operations, typically in centers over a population of 74, the reception desk should allow children to easily see the adult behind it. It should be a simple desk, not be a high counter such as might be seen in a professional office, for example. (The need for a reception desk should be questioned during design concept development, as it has been noticed that this feature in existing centers is often underutilized.) The main entrance should be in close proximity to an adult toilet room, for use by parents.

Other points of entry for the facility include service entry access to the play yards and the classrooms. The main entry should include an exterior transition area (where a covered bench for good-byes, "shoe-tying" and other child/parent interactions can comfortably occur). A vestibule for energy conservation, conforming to ADA dimension requirements and a reception area are also required. Secondary entries should have transition areas, but do not require thermal vestibules. Consider providing porches or mud rooms, depending upon climatic conditions, in individual geographic locations. It may be desirable to alarm areas also required. Especially where these locations are difficult to monitor, fire egress doors should be alarmed.

7.1.7 Exterior Transition Spaces:

All exterior entries used by children must have transition spaces consisting of a bench and a covered area of not less than 2 square meters, at a minimum. "Covered" means with a roof, canopy or trellis. Transition spaces are important in creating a comfortable environment and integrating the exterior and the interior. These spaces allow children to adjust to the changes between interior and exterior light levels and temperatures. The transition spaces also may serve as a "mud room" or may provide an intimate area for children within the outdoor environment.

Overhanging elements extending from the building, such as porches, verandahs, canopies, or arcades can create successful transition spaces and in some climates can be used for program areas

7.1.8 Vestibule:

Provide views of the short-term-parking area from the entry vestibule and design the windows to have low sills so that children can look out of and into the center. This vestibule should consist of two sets of doors to provide energy conservation, and the door must be arranged in a way to permit use by those in wheelchairs, as per ADA.

The entrance requires emergency egress hardware (at adult height). Provide a flush-mounted walk-off mat to prevent water and soil from being tracked into the center when it is free-standing. The entrance will require some security devices for control, and must be provided as designated by the FPS's security risk analysis. This equipment should be non-intrusive and have a non-threatening appearance. Refer to the security section in Chapter 10 for more information on the security system. In areas with snow and ice, a generous roof overhang or canopy will diminish the risk of falls. The minimum overhang at the exit door must ensure that it can open for fire purposes, even during periods of heavy snow and ice.

7.1.9 Reception:

Immediately inside the entry, provide a reception area. This area needs to be warm, bright and welcoming, and as comfortable as possible. The reception area connects the entrance to the main circulation pathways of the center, and from this area, parents escort children to the classroom.

A reception desk at desk height may be provided in large centers. If it is provided, it may be designed in a way that allows it to serve several functions. For instance, it may incorporate sign-in facilities or the parent/teacher "mailboxes" or both. A counter, which is typically simpler and less expensive than a reception desk may also serve these functions. If space permits, a small table or desk would be appropriate. In all events, a child should be able to see the adult behind the desk upon entry. (The need for a reception desk should be questioned during design concept development, as it has been noticed that this feature in existing centers is often underutilized.) Typical furnishings in the reception include a sofa, chair, end table, and coffee table.

A slotted fee box for tuition checks should be provided near the reception area, together with cubicles for parent notices as well as a notice/bulletin board. Select durable finishes that have an informal, comfortable appearance, and establish a warm, inviting feeling through use of color, soft seating, plants, and art work. Recommended finishes include carpeted floor and a wall finish which is washable and durable. Cut pile carpet has proven less durable than looped pile. Oriental-style patterned rugs also increase the associations with a home environment. Like all "thrown rugs" in the center, these must have non-slip backing.

7.1.10 Main Circulation:

There are two types of circulation paths in a center: the main circulation connecting the various classrooms and major spaces of the center, and the internal circulation patterns within those spaces. Circulation within classrooms will be discussed in the classroom section of this chapter.

The main circulation serves as a community space, as well as a pathway. Especially in child care centers, the circulation space should never be simply utilitarian in character. Instead, it should be conceived as a street or a gallery with stopping and cueing areas along the way. There is opportunity for important social interaction along the circulation. It is a space to meet other children and parents, a vantage point to see into classrooms, an exhibition space for the work of children, or prints of other kinds of art and perhaps even quotations to inspire and educate adults about child care issues!

The designer should strive to arrange spaces to be economical in the amount of built area devoted to “pure” building circulation. There should be at least one accessible drinking fountain in the corridor. But the designer must de-emphasize the institutional appearance typically created by a long, undeviating, double-loaded corridor (with doors to rooms on both sides). When it is not feasible to vary the layout of the circulation corridor, design strategies to de-emphasize such an impression include:

- *Lighting* Skillful introduction of artificial lighting (for instance, instead of the dead center placement of fluorescence in corridor ceilings, consider using some strategically placed wall washers, or better yet, introduction of natural light through skylights. Providing a window, glazed door or skylight at the end of a corridor is very psychologically advantageous.
- *Floor Pattern* can create a strong sense of place for children. It can also be used by the skillful designer to diminish the impression of long, double-loaded corridors. For instance, large pattern repeats are often effective to de-emphasize the “tunnel” appearance of double-loaded corridors. Likewise, patterns which are not symmetrically arranged or which emphasize functional areas (such as entrances to classrooms) are effective means to achieve the same end.
- *Color* The designer should explore the use of color to visually alter the dimensions of otherwise institutional looking double-loaded corridors. Care should be taken to avoid an over-stimulating color scheme.

Children gain a sense of orientation when they can see the entrance to their classroom and recognize landmarks such as displays, common areas, and other design features. Teachers and children require clear views between the classroom and circulation areas at their respective viewing levels.

The main circulation must be designed and constructed to serve as a primary means of emergency egress. Through judicious arrangement, the designer should strive to lower the amount

of area devoted to a purely utilitarian circulation. In no case should more than 30 percent of the Occupiable Floor Area (OFA) within a facility be used for primary circulation and service areas unless the center location is very irregularly configured. The Occupiable Floor Area (OFA) allowance includes circulation within the classroom

Eliminate outside corners in the circulation pathways to the extent possible. Angled or curved corners aid in manipulating cart traffic and strollers, and eliminate a possible source of injury.

Recommended finishes for major circulation paths include impervious surfaces at the floor and at wainscot height, and paint above wainscot height together with safety glass in windows along the corridor.

7.1.11 Staff Spaces:

Staff areas include:

- Director's office
- Assistant or secretary's work space
- Parent/teacher conference area
- Staff lounge and work area
- Staff toilet
- Central resource storage

Spaces used by the staff, particularly teachers, should be located to provide easy access from the main circulation.

7.1.12 Director's Office:

The director will perform most desk work and interviews in his or her office. During the day, the director may meet there with parents, staff members, children, or other visitors, and conduct parent interviews. Larger centers may have an assistant or secretary who works closely with and shares duties with the director. The assistant or secretary may share the director's office space.

Place this office in a quiet space, next to the reception area and accessible to visitors. To supervise properly, the director's office must have excellent views of the main entry, reception and as many classrooms as possible.

The director's office should be comfortable, with a carpeted floor and washable wall surfaces. Provide adequate lighting, concentrating on the task lighting component and acoustical separation of at least 45 STC from the children's active areas.

Furnishings should include a desk and chair, two guest chairs, filing cabinets, coat rack, shelving for books and resources, and lockable storage cabinets or a closet for personal belongings.

ings and first aid items. Provide space for a cot (for a sick child). (See the discussion about isolation sick bay under 7.1.4, “Common Areas.”) If an assistant or secretary works in the director’s office space, additional furnishings are needed such as a desk and chair, filing cabinets, storage for personal belongings, and additional guest seating.

The director’s office requires a telephone, and may have security video monitors. Provide appropriate power supply to accommodate a personal computer and printer as well as a fax machine. A copier and video equipment also may be stored here, if not placed in a work room or a resource storage area.

7.1.13 Parent/Teacher Conference Room:

Parent/teacher conferences and meetings between staff members usually occur here. This space should be located in a quiet, private area, adjacent to the staff lounge.

The conference space should be comfortable, pleasant, and quiet. Furnishings include a conference table and seating for a minimum of six (depending on the size of the center and its associated staff), shelving for books, and a notice/bulletin board. Lighting should be dimmable so that video materials may be viewed.

7.1.14 Staff Lounge:

The staff use this space not only as a retreat, but also as a workroom. They eat, relax, and converse here, plan curriculum, and prepare classroom materials. It may contain a cot or sofa. The staff lounge should be located near the adult toilet and central resource storage. This space requires visual and acoustical separation from children’s areas, but should be easily accessible to the staff.

The lounge needs to be comfortable, pleasant, and soothing. Provide a counter with a microwave, a sink with plumbing connections, at least an under-counter refrigerator, and cabinets. Provide impervious flooring at the counter area. All base cabinets should have “child proof” hardware. Furnishings include a table with four chairs, a small sofa, and storage (some of which is lockable).

The workroom must have adequate space and power connections for telephone, computer, video equipment, and laminating and copy machines (either here or in the director’s office). Isolate these machines acoustically within the space, perhaps in an alcove, for better control of noise. Provide space at the counter for a butcher paper holder and an art waxer (a piece of equipment that allows children’s art to be hung without the need of tape or pins.)

7.1.15 Staff Toilet:

A center must provide at least one adult toilet, although two, remotely located from each at either end of the center are highly recommended. Two adult toilets are desirable to enhance the center’s functioning because teachers will be out of classrooms for shorter periods. Adult toilets in the center must meet all UFAS and ADA code requirements. Toilets should be accessible from the reception area and staff lounge. Recommended finishes include impervious flooring such as linoleum and painted walls above an impervious wainscot.

One adult toilet should be located in or near the infant and young toddler classroom areas, and

will be discussed later in this chapter in the section on classrooms. Adult toilets should be provided with toilet seat cover dispensers.

7.1.16 Central Resource Storage:

The director and teachers use this centrally located resource room for bulk storage of curriculum materials and supplies, and for storage of resource tapes, books, as well as audio/video equipment. The central resource storage should not be seen as a substitute for the small scale storage necessary within the class room itself. Typically, this type of storage in the classrooms is provided by wall-mounted cabinets. The base of such securely anchored cabinets must be no lower than 1370 mm above the finished floor below.

Provide adequate lighting; open shelving; lockable, closed-door storage; and filing cabinets. If space permits, a work counter and a counter-height stool may be provided.

7.2 General Concepts for Classroom Design

Children spend most of their day in the classroom. It affords facilities for care functions, and opportunities for developmentally appropriate activities. Parents typically drop off and pick up children at the classroom. Adults may visit during the day, or help out as volunteers.

7.2.1 Classroom Areas:

The classroom design includes functional areas defined by furniture arrangements and constructed elements that vary depending upon the age group. In order to maximize the amount of space devoted to these important functions, the circulation between entrance and exits should be as direct as possible. Adjacent to circulation, it is appropriate to position tables and work surfaces - more crowded functions while retaining corners and floor area for more protected and nurturing activities. The areas within the classroom should be designed or arranged to fit four or five children and one adult although there should also be a group gathering area. Finally, there needs to be alcove-like areas to “get away” areas for children to be by themselves or in smaller groups .

Major classroom elements will remain fixed, such as those requiring plumbing connections, risers or casegoods secured in place for safety reasons. Children and their teachers will modify the remaining space continually to create areas for their activities. The classroom should provide flexibility for these activities. The arrangement of storage cubbies for children’s personal items will be less frequently altered. Manufactured cubbies anchored to partitions or low walls have been found to be a cost effective solution rather than built-in types. The designer must ensure that the space as designed can accommodate the manufactured cubbies specified. To ensure that the proliferation of children’s personal items in and around cubbies does not destroy the order and function of the classroom, cubbies should be arranged to form a “cloakroom,” or entrance alcove, with their openings facing away from main classroom areas.

Children require opportunities for a range of diverse activities in the classroom. Lofts, which GSA will typically purchase offer an important feature for exploration within the classroom. Though provided by GSA, the designer must accommodate this furniture within the design. Built-in lofts are not recommended. Where low shelves and partitions are used to separate use areas, they must be secured against tipping. A mixed-age classroom typically provides all elements needed for each age group. A well equipped classroom for particular age groups requires the following specific areas:

Infant Classroom:

- Entrance
- Cubby storage
- Classroom and teacher storage
- Adult toilet within classroom (preferable, but no more than 10 meters of infant classroom entry)
- Diapering station and storage
- Sleeping/crib area
- Nursing area
- Eating/table area
- Food preparation
- Open activity and crawling area for play and development

Young Toddler Classroom:

- Entrance
- Cubby storage
- Classroom and teacher storage
- Adult toilet within 10 meters of entry
- Diapering station and storage
- Children's toilets and sinks
- Eating/table area
- Food preparation
- Open activity area for play and development
- Area with level change (three risers minimum)
- Cot storage

Older Toddler Classroom:

- Entrance
- Cubby storage
- Classroom and teacher storage
- Children's toilets and sinks (one sink at toilet exit preferable to avoid congestion)
- Eating/table area
- Art sink
- Area with level change, (three risers, minimum)
- Open, unrestricted activity area
- Water fountain
- Cot storage

Pre-School Classroom:

- *Entrance*
- *Cubby storage*
- *A three year old classroom requires a small diaper changing area*
- *Classroom and teacher storage*
- *Children's toilets and sinks (one sink at toilet exit preferable to avoid congestion)*
- *Eating/table area*
- *Art sink*
- *Water play area*
- *Drinking fountain*
- *Loft area*
- *Area with level change, (three risers, minimum)*
- *Open, unrestricted activity area*
- *Block area (5.95 M² minimum) that is located away from main circulation*
- *Cot storage*

School-Age Classroom:

- Entrance
- Loft area
- Area with level change, (three risers, minimum)
- Personal storage
- Classroom and teacher storage
- Private male and female toilets with hand washing sinks in toilet rooms where more than one toilet is required.
- Eating/table area
- Art sink
- Open, unrestricted activity area
- Kindergarten classrooms require separate male/female toilets, which comply with ADAAG and with UFAS. Doors must be low enough (1500 mm max.) to allow adult supervision. If windows are used they should also be located to allow adult supervision of the areas.

The zoning of classrooms is critical to the success of the center. The designer will have to consult at length with users including the provider, if possible, as well as the RCCC. General design principles include:

- Discreet functional areas need to be planned in the design of the classroom even though they will be created primarily with furniture.
- Noisy and active areas need to be away from quiet ones
- The circulation from equipment such as slides needs to empty away from activity centers.
- Block play is an essential activity and areas must be provided where blocks can remain in position for more than a day. This means it must be protected from main circulation paths and active play.
- Do not encumber the space with more tables than necessary for meal time. Avoid excessive distance between them. In terms of using the minimum amount of circulation space, rectilinear tables arranged with 1 m clear space between them have been found to work best.

7.2.2 The Classroom Location:

In order to receive the maximum access to natural light, classrooms should be located along the exterior perimeter of the building. Where this is not possible, the classroom must “borrow” the maximum amount of natural light from areas that are located along an exterior wall which has windows. Classrooms require direct access to the central circulation system and as direct as possible to the play yards. Classrooms should also be close to common use spaces. Infants and young toddlers must have classrooms separate from other age groups. In small centers, the design should allow for construction of additional classrooms, if future expansion is likely.

7.2.3 Classroom Size:

Design classrooms to accommodate the number of children for each age group. Refer to Chapter 4 for the NAEYC table for maximum group sizes and Chapter 5 for the table defining space allowances for each age group’s classroom. Local licensing requirements must also be referenced. The most stringent standard should apply.

7.2.4 Separation of Spaces:

Separation can be achieved by using solid and glazed partitions (either partial or full height), doors, casework, cabinets, panels, and railings. Three types of separation must be considered:

- Acoustical separation
- Visual separation
- Physical separation

The following aspects of separation need to be considered when designing the classroom spaces.

- **Separate classrooms:** Groups of children must be physically separated from each other. Sound transmission between classrooms should be controlled, with not less than 34 STC partitions, although complete acoustical separation is not necessary. High noise levels from adjoining classroom spaces can disrupt class activities and raise tension levels. Some noise transmission is desirable to allow children to be aware of other groups. Children views through windows between classrooms are required, and at least one view window at children’s level between classrooms should be programmed. At least one adult view window is also highly desirable.
- **Partial enclosure:** Provide partial height enclosure for fixed elements in the following areas: food preparation, children’s toilet and hand washing, sleeping area for infants, the rear of cubbies. Food preparation and toileting/diapering areas must be clearly separated to diminish the chance that a caregiver could inadvertently go directly from diapering to the food preparation without hand washing. Partitions with vision panels can be used effectively for this purpose to separate these areas while still allowing supervision.
- **Complete enclosure:** Provide complete enclosure for teacher storage within the classroom and for the adult toilets.

7.3 Scale

If the classroom is to be “nurturing”, its design must reflect the designers appreciation of children’s scale, including the size of individual spaces within the classroom and the scale of furnishings. (Refer to Anthropomorphic Table.) It is important to adjust the perceived scale of the classroom. While areas of high ceilings in a classroom may be desirable, in spaces which the child perceives as “too high” to have a residential character (85% of the room over 3350 mm high) perceived height must be modulated.

For instance, consider using pendant lighting or ceiling fans hung at no lower than 2285 mm above the occupied floor area below. Pendant task lighting over fixed elements may hang as low as 1675 mm as long as headroom is not required for passage. Choose fans to improve air flow and energy efficiency with rotation that can be reversed, depending upon the season. Aside from the obvious mechanical and lighting enhancements that these strategies provide, they also help tailor spaces to children’s spatial perceptions. In addition, provide the opportunity to hang banners and create trellis ceilings over activity areas. Ensure that they will not impede the function of the sprinkler system.

Window sills and counters used by children should be child height, depending on the age of the child using the space. However, leave 460 mm beneath window sills (measured to the classroom finish floor) so that furniture and equipment can be placed easily along exterior walls. Storefront-type windows to the finished floor are not desirable.

Furnishings and equipment for children should be child-scaled, such as toilets, hand washing sinks, and countertops. Countertop height and reach depth should provide children with the opportunities to use them unassisted.

Consideration must also be given to the adults using the space. Center design must be adult-friendly, as well as child-friendly. As a result, not all elements should be reduced in scale. Door locks, light switches, and other functional elements should retain adult scale and be mounted at standard heights. Food preparation, storage and service spaces, and other areas of the center used by adults should remain at standard scale. Furnishings for adults such as sofas used for comforting and reading to infants and young children should be adult scale. Some items may double function for children and adults, In placing electrical/telecommunication or security equipment, ensure that cords and wire are not placed in such a way that children can reach and play with them or that their placement can pose a strangulation threat.

7.4 Architectural Form

The architectural form of the classroom should be an appropriate setting for a child, conveying a definite sense of place while preserving optimal flexibility, with the great majority of the space free of constructed elements. In this way, furniture arrangement can create the required functional area.

- **Vary ceilings heights.** Vary ceiling heights to define areas, disperse light, and create interest. Higher activity levels are often encouraged by higher ceiling heights, while quiet

areas are supported by lower ceiling. The probability of higher construction costs must be considered in determining the extent of variation.

- **Vary floor levels.** Consider varying floor levels to create riser lofts and low platforms. Sunken areas are also effective. The designer should be aware that permanent, constructed level changes may restrict flexibility and use up valuable open floor space when they become too large. Some level change may be effected by elements which are not fixed. When used effectively, level changes add interest and create intimate areas for children. Terraces and platforms provide areas for socio-dramatic play activities and also can double as seating areas. Lofts that can accommodate 3-5 children can offer children many possible activities, such as large motor activities, dramatic play, or perhaps space apart for designer must keep in mind that low level changes can sometimes be a tripping hazard.
- **Vary wall configurations.** Consider modulating partitions to create interest, soften a space, to create a more nurturing impression or to create special spaces. Avoid the occurrence of 90 degree or acute outside corners that pose hazards to children who may run into them. Curved or obtuse angled partitions should be considered instead. The designer must keep in mind that visibility of all areas within the classroom is a key factor, so avoid creating “blind” areas that would make teacher supervision difficult.
- **Locate plumbing fixtures in one area.** Elements with plumbing connections, such as toilet areas and art sinks, should be grouped together for more efficient construction where possible. Food preparation must be separated from diapering and toilet areas, though it can be placed on the opposite side of partitions with plumbing.
- **Provide ample display space.** Provide a significant amount of classroom wall display area at children’s height for display of art work and projects. Devices for display of artwork that do not involve tacks (because they are dangerous around young children) and tape (because it can damage the finish of partitions) should be included. Display of the children’s artwork is an indication of a successful child care center where children’s art and development are valued.
- **Preserve inside corners.** Corners within the classroom offer opportunities to create differentiated areas. Retain inside corners, and use the features such as low partitions in back of cubbies to create the nurturing corner spaces.
- **Provide natural light.** Provide natural light with windows, preferably with light coming from at least two directions, through windows, clerestories, atria, and skylights. Natural light is essential to children. Space without access to light should be reconsidered an inappropriate location for young children. Each orientation has light that has a special quality. Maximizing the amount of light and taking advantage of as many orientations as possible to achieve variety in the type of lighting is highly desirable. In cold climates, large expanses of glass on the north side of the center can create drafts and uncomfortable temperature ranges; in southern climates, large expanses of glass on the south side of the facility can cause dramatic heat gain. Shading devices such as overhangs, louvers, trellises, and trees should be considered for window areas that receive direct sunlight. Low countertops or shelving may be provided at some window areas for growing plants and

conducting other nature-oriented activities. If these countertops and window trim have warm hues such as those associated with light natural wood, a sense of warmth can be infused to the classroom's environment.

- **Provide views for children.** Views allow children to be aware of their surroundings and the world beyond the center. Views should be provided to the outside, particularly to the play yards. Views to atria and planters, common spaces, other classrooms and circulating pathways also are of benefit. Windows should be located at sills low enough for children to see out of them, yet should allow small-scaled furniture to be placed beneath them.
- **Provide visibility to the staff.** Teachers must have an unrestricted view of the children at all times, both within the classroom and in the play yards. Views must be provided between classrooms and other spaces in the center. Any interior doors, with the exception of adult and school-age toilet areas, must have visibility panels. Dutch doors are not recommended as they pose a hazard for finger pinching. Partial walls and interior glazing allow visual supervision and allow children to be aware of others in the center. Partitioning at the sides of toileting areas should be no higher than 1070 mm to allow supervision of children younger than kindergarten; 1370 mm for kindergarteners. There must be gates with view panels in infant and toddler classrooms to prevent children from accessing kitchen and diaper areas.
- **Zone classroom space to separate active and quiet activities.** Use variations in ceiling height, floor height, wall configuration, light levels, finishes, and open areas to modulate perceived activity levels within the different areas of the classroom. Zone high-activity areas, such as the entrance, eating/table areas, and the exit to the play yard, away from areas intended for sleeping and quiet activities. Likewise “messy” areas and “clean” areas should be considered by the designer and zoned to provide appropriate separation.

Figure 7.9: Quiet and Active Areas

7.5 Component Areas of Classrooms

7.5.1 Classroom Entrance Areas:

Each classroom should have a distinct and welcoming entrance. The entrance must meet all emergency egress requirements. A second classroom entrance, either to the main circulation path or to the play yards, should be considered and may be required for egress, depending on center configuration. Place the entrance along a wall, leaving valuable corners available for activity areas. Entrances should allow for views from the main circulation area to classrooms. Near the classroom door, there must be a sign in counter (with storage below) at approximately 845 mm above the finished floor.

7.5.2 Cubby Storage Area:

Upon arriving at the classroom entrance, children typically store their outdoor clothing and personal belongings. They may again need their outdoor clothing at times during the day to go to the play yard or on excursions, and to go home. Parents may linger in the cubby alcove, spending time with their children or with teachers or other parents. The design of the cubby area must consider these activities so that bottlenecks do not occur at the classroom entrance. Arrange cubbies in a “cloak room” arrangement so as not to take up valuable classroom wall space. All the cubby storage areas must include these features:

- Compartmentalized open-front, scaled to child size, one for each child in the classroom.
- Secure cubby storage units to the floor and wall to prevent tipping accidents.
- A 915 mm clear area is required in front of the cubbies for access.
- Seating, such as a bench, (which may be integral with the cubby for either adult or child use.)
- A parent bulletin board, locked tuition drop box, and parent mail box (located at the cubby area or in the reception area.)

The size and type of cubby storage vary according to the age group of the classroom. It is also convenient to include a shelf for child safety seats, if space allows. It has been found to be more cost effective to purchase cubbies and the designer must take care to verify the manufacturer’s dimensions of cubbies recommended by the GSA coordinator. The design must coordinate the build out to accommodate this purchased equipment.

7.5.3 Infant and Young toddler Cubbies:

Infants and young toddlers need storage for their diaper bags, clothing, and supplies. These purchased cubbies are typically approximately 305 mm wide, 305 mm deep, and 455 mm high. The bench in the infant area should be at about 380 mm above floor height for parents to sit while removing or putting on the baby’s outdoor clothing.

Parents may wish to leave collapsible umbrella strollers or other child-carrying equipment at the center during the day. Rods for this purpose should be provided here or near the reception area. Provide 230 mm to 255 mm of rod length per every five children and install at approximately 1370 to 1525 mm above the floor. If a double storage rod is needed, install the top rod at about 2130 mm and the bottom rod at about 1065 mm above the floor. Provide a retaining rail to keep the lower ends of the strollers in place.

7.5.4 Older Toddler and Pre-School Cubbies:

Older toddlers and pre-school children need to store bulkier outdoor clothing in their cubbies. Storage is required for satchels or backpacks used by children to carry personal items. Satchels and backpacks may be stored on hooks. Lunches brought from home must be properly stored for temperature maintenance and should not be stored in the cubbies.

Cubbies for this classroom should be a minimum of 305 mm wide, 305 mm deep, and 1220 mm high. Two hooks are needed in each compartment for hanging garments, and a shelf should be included for boxes, boots, or extra shoes. The bench in this area should be about 255 mm high for children to sit on while donning their outdoor clothing and boots.

7.5.5 School-Age Lockers:

School-age children need to store outdoor clothing, books and papers from school, and other personal belongings in their lockers. These lockers may be stacked two high if space is limited. The open compartments should be a minimum of 305 mm wide, 305 mm deep, and 760 mm high.

7.5.6 Open Activity Area:

Each classroom must have an open, unrestricted activity area, clear of constructed elements. Teachers, along with the children, are ultimately the “architects” of this space. They can adjust and alter this flexible area in an ever-changing response to their needs and activities. This can be accomplished through the use of elements such as curriculum equipment and materials, movable panels and demountable walls, fabrics, furniture such as seating or shelving, and display racks. The required space allotment for this area is found in Chapter 5. Requirements for appropriate activities occurring within this space will vary according to the age of the children. Categories of play activities recommended by NAEYC are as follows:

- Discovery, including sand and water play
- Large motor activity
- Art
- Music
- Socio-dramatic for make believe and role playing
- Reading/listening

- Manipulatives with small puzzles and finger toys
- Block building
- Woodworking
- Science, including nature study
- Math

Locate the open activity area within the classroom to take full advantage of natural light. Arrange the fixed elements along inside walls to reduce bottlenecks and maximize the natural light in the space. The design should encourage traffic pathways that avoid disruption and do not pass through activity areas. Wall or partition patterns with offsets will allow for more intimate areas for children while not obstructing teachers' views to the activity area. Preserve corner areas which provide natural boundaries to set apart an activity area.

Include the following architectural features in the open activity area for each age classroom:

- Acoustically treat surfaces as required to reduce noise.
- Supplement natural light with full-spectrum lighting, capable of being dimmed.
- Avoid acute or 90 degree right angle outside corners projecting into the space. Provide a 13 mm radius or beveled edge on all outside corners of constructed features.
- Ample counter areas at child height are needed for work surfaces and display areas. Consider a counter at a portion of the window area for growing plants and conducting nature studies.
- Allow for adequate electrical outlets, to particularly serve counter areas, for items such as radios, tape players, televisions, projectors, and keyboards. Locate outlets for this kind of equipment out of reach for children, (at least 1370 mm above the finished floor so that children cannot access the outlet or pull equipment off of counters by using cords connected to low-mounted outlets.)
- Consider how the child views his or her surroundings when designing the classroom. Spending time on the floor at a small child's viewing level is a helpful exercise for a designer of children's spaces.
- Furnishings consist of child-scale tables, chairs, and open storage units. Adult-sized comfortable seating is also needed. Bulletin boards and other display areas should be placed at children's height. Refer to Chapter 8 for a complete list of furniture, equipment, and

applicable criteria. Continuous strips from which to hang children's art are strongly recommended. These may be strips placed at approximately 1000 mm to as high as 1370 mm above the finished floor.

- Allow for adequate storage of all curriculum materials and supplies required. Refer to the discussion on storage in this chapter.

7.5.7 Activity Area for Infants:

The infant open activity area offers all the opportunities for discovery and learning. This area must be a safe, soft, "print rich", stimulating environment in which babies can crawl, explore, and interact with their teachers.

Provide the following architectural features in the infant classroom:

- Furnish soft-surfaced level changes, either through constructed platforms or movable forms. Level changes should be slight with a maximum of 76 mm to 102 mm between levels. This should be a soft, cushioned space with a variety of textures and coverings. Level changes can be created using constructed platforms with ramps, or stacked upholstered blocks in various configurations. Maximum unenclosed platform height accessed by padded level changes is 455 mm above the floor. Refer to the discussion in 7.6 of this chapter for a further discussion of platforms and lofts for additional information on level changes. An enclosed raised area for infants at 915 mm above floor level should be considered so that they can be eye-level with seated adults and see the entire room.
- Nests and crawl spaces provide a safe environment which a baby can explore. These can be constructed with low, permanent, soft barriers, or movable objects.
- Furnish low grab bars at 455 mm above floor level to aid infants in pulling up to a standing position. These bars also may aid an infant's sense of security while developing walking skills. A minimum total length of 1525 mm is to be provided in each infant class room.
- In order to meet licensing requirements in some states, carpet is not allowed in infant rooms. Floors that are not padded shall be a material tile, linoleum, or wood in order to be mopped and sanitized daily. Soft areas can be provided using area rugs, floor mats, etc., provided they have anti-slip surfaces to prevent accidents.
- Furnish views to the outside and to the circulation pathways from floor level, if possible.
- Consider a baby's point of view and furnish interesting things to observe. These include views from adult seating and standing height while the child is being held.
- Furnish mirrors at floor level for babies to see reflections. Approximately 455 mm minimum height is recommended from the finished floor. Mirror material must be shatterproof: safety glass, acrylic, or reflective metal. Edges must not be able to cut or puncture skin.
- Refer to Chapter 8 for a list of furniture and equipment supplied for this area.

7.5.8 Activity Area For Toddlers:

The toddler open activity area should offer an even greater range of opportunities for exploring and greater challenges in developing large motor skills. Toddlers have just learned to move very quickly, often in groups of two or three. The activity area must allow for running and cruising (movement through the space to view and select from a variety of activities) without disrupting children in other activities. Provide the following architectural features in the open activity area for older toddlers:

- Design broader pathways to accommodate group movement or cruising.
- Furnish intimate spaces for toddlers which still retain visual connection with the teacher.
- Hard surface, impervious flooring shall be provided throughout, unless the initial design meetings present a strong predilection towards carpet — for instance, in particularly cold climates. The amount of carpet will be determined during the initial design concept phase. Area carpets with non skid backing and mats will be provided by GSA for quiet areas. Loft that accommodate 3-5 children and platform areas for larger gatherings need to be a greater challenge than those in the infant areas. Refer to the loft and platform area discussion in this chapter for more information.
- Allow for sand and water play which might consist of freestanding tables or troughs with nearby hooks for smocks and towels. An impervious floor finish must be provided. Provide a floor drain, if feasible. (It will not usually be feasible in an existing center.) Sand and water play can occur in the art sink area. Art sinks shall be provided for older toddlers but not young toddlers.
- A listing of furniture and equipment for this area is found in Chapter 8.

7.5.9 Activity Area For Pre-School Children:

The pre-school open activity area is larger than the younger children's due to the greater number in this group and their increased energy level and variety of activities. Pre-school children are involved in a wide range of activities, and their level of skills enables them to take part in more advanced activities, requiring a greater number of interest areas configured for small groups of children in each area. Provide the following architectural features in the pre-school classroom:

- Allow for maturing skills in large motor development. Refer to the discussion on lofts and platforms in this chapter.
- Allow for sand and water play which might consist of freestanding tables or troughs, with nearby hooks for smocks and towels. An impervious waterproof floor finish and a floor drain is required where feasible. Sand and water play can occur in the art sink area.
- A listing of furniture and equipment for this area is found in Chapter 8.

- Hard, impervious floor surfacing throughout with area rugs provided by GSA for quiet areas (Unless the initial design meetings present a strong predilection towards carpet. The amount of carpet will be determined during the initial design concept phase.

The school-age open activity area needs to allow free movement within the space. More cooperative play can occur in this classroom, such as group activities and games. Children of this age have a higher level of development which enables them to take part in a wider range of activities.

- Provide a quiet area within this space for children to do homework. An area for reading should be provided with natural light and a quiet environment with natural light.
- The activity area should be large, open, and flexible.
- School-age children require ample table space for games and projects.
- Storage is required for games and supplies.
- School-age children in summer programs often go on excursions and use the classroom mostly for a staging area.
- A listing of furniture and equipment for this area is found in Chapter 8.

7.6 Lofts/Platforms

Lofts and platform areas are optional constructed elements within the classroom. These areas can offer many activity opportunities and advantages. Lofts and platforms are not appropriate for every classroom because they can minimize flexibility. Lofts must always be designed with the safety of the child in mind. This means that there may be no way with the aid of constructed elements for the child to fall from a loft. Typically, lofts will be purchased pieces of equipment that the A/E will accommodate in the design. Lofts with slides and steps offer variety of experience. However, it is best for circulation if they are located descending in the same direction. Consult with GSA RCCC on selection of the purchased lofts. Coordinate sprinkler requirements to avoid having to sprinkle under lofts or having children too close to sprinklers.

7.6.1 Infant Lofts and Platforms:

Infant classrooms require soft, colorful crawling areas with low level changes such as low, carpeted, constructed platforms; movable foam shapes; or forms that provide level changes. Ramps or small 76 mm to 102 mm steps should be used between level changes. All corners should be rounded and all surfaces should be soft and forgiving of falls. The maximum total height of platforms for infants is 455 mm.

Recessed constructed areas provide infants with large, contained spaces in which to move about and explore. The low retaining sides allow infants to pull up and move. Similar portable low boundaries might work as well. Caution must be used in permanently constructing such an area so that it will reduce classroom flexibility.

7.6.2 Toddler and Pre-School Lofts and Platforms:

Lofts enhance toddler and pre-school classrooms by offering:

- Challenging, large motor activities
- Small intimate spaces
- Additional spaces for exploration
- Opportunities for a child to view the environment from another level
- A classroom with more character

The following design requirements must be considered in the design of a loft for toddler and pre-school age groups.

- Lofts must be no higher than 915 mm above the finished floor for toddlers and 1370 mm above the finished floor for pre-school children. Lofts should be designed to minimize conflict: allowing more than one child to use equipment at any one time. For instance, offering stairs going up and a slide coming down will minimize congestion and the resulting possibility of conflict.
- Loft features meeting the definition for fall zones must be provided with resilient surfaces as prescribed by the Consumer Product Safety Commission's *Handbook for Public Playground Safety*. Please refer to Chapter 6, Play Yard Surfaces.
- Lofts must meet the requirements of the current PBS-PQ100.1a and other local, state or federal standards that may apply.
- Guardrails must be provided to protect children from falling from raised areas. Toddlers must have guardrails on any constructed surface greater than 250 mm above adjacent surfaces. Pre-school children must have guardrails on any raised surface greater than 505 mm above floor level.¹ The top of the guardrail must be at least 760 mm above the platform, or as per local codes, whichever is more stringent. Openings between 88 mm and 229 mm must be avoided to prevent head entrapment. There can be no openings between 9 and 25 mm to prevent finger/ hand entrapment.
- Protective barriers must be provided on all raised surfaces 750 mm above floor level or higher for pre-school and younger children.² Protective barriers can be vertical slats, or preferably acrylic panels (for clear visibility). Openings in these panels should not be greater than 76 mm to prevent entrapment. Avoid using horizontal rails that allow climbing.
- All protruding corners must have a minimum radius of 13 mm.
- Teachers must be able to see and easily reach all areas of a loft.

- The loft should present an image of safety, avoiding over-stimulating elements such as cantilevers, narrow bridges, or other elements that present overly-challenging activities.
- Design level changes appropriate to the age group, accessible by ramps, steps, or ladders. Steps and ladders should allow two children to use them at the same time to avoid aggressive behavior. Riser heights for stairs should be approximately 125 mm for toddlers and pre-school children. Minimum tread depth is approximately 280 mm. Stairs and ramps must be a minimum of 915 mm wide.³

Provide handrails for all stairs and ramps at 550 mm above the leading edge of the treads. All handrails must return to the wall to avoid the possibility of injury. Handrails must also meet state and local codes.

7.6.3 Art Sink:

In toddler classrooms, provide a stainless sink with a goose neck faucet and wrist handles mounted in a 555 mm high counter for children to use in art and other activities requiring water and cleanup (such as sand and water play). For pre-school, and school-age the sink height should be 650 mm. The sink arrangement should have a goose neck faucet to allow teachers and children to get a bucket under the faucet. Traps should be easily accessible for clean-out. The art sink area should include art supply storage, display, and drying areas for finished work or work-in-progress. The counter should be 455 to 505 mm inches deep, allowing children to reach the faucet. Provide 915 mm to 1220 mm of open counter length adjacent to the sink. Provide an adult height art sink in all toddler and preschool classrooms at 865 mm A.F.F. Faucets and levers should be located behind the sink adjacent to the wall rather than at the side of the sink. faucet controls should be no less than 350 mm from the leading edge of the counter. See 10.4 “Accessibility” for reference to ADAAG-required heights of elements for the disabled child.

Locate the art sink next to the eating/table area because most art activities require similar tables and finishes. This sink should be close to display walls equipped with dry marker boards or chalkboards. Provide sheet impervious floor coverings with sealed seams and using a floor drain in this area, if feasible.

7.6.4 Toilets and Sink:

For toddlers and pre-school children, the plumbing requirements are as follows:

- A minimum of two toilets and two child height hand washing sinks within each classroom area that uses the toileting facility, with never less than one toilet, one lavatory and one drinking fountain per every 12 children who will use them. Note: two classrooms may share one toilet area.
- Toddlers: Two adult sinks minimum, one for diapering in toddler room, one for food preparation.
- Preschoolers: 1 adult sink, 1-2 handwashing sink(s) per 10-20 children, one connection for water play.

Until kindergarten, these toilet areas are used by both girls and boys, and are partially screened but without doors. This offers some privacy, but still allows adult supervision. Toilet areas are to have gates or half doors at entrances and may have child height partitioning between toilets. As with all full height doors, these elements must have hinge protection so that children's hands and fingers are not accidentally pinched or crushed.

Kindergarten and school-age children must be provided with private toilets and sinks with separate facilities for boys and girls where more than one toilet is provided. These facilities should be accessible from the classroom, and they must have doors for privacy. Note that each toilet room must meet ADAAG requirements.

Teachers in older toddler and pre-school rooms are provided an adult toilet located outside the classroom. An adult toilet is to be provided within or nearby infant and young toddler classrooms.

Toilets located within the classrooms should typically be placed toward the interior perimeter to leave the exterior free for access to natural light and views. They are constructed as part of the fixed elements, and should share plumbing walls with other areas requiring plumbing connections to the extent possible. The toilet area must be physically separated from food preparation and eating areas, and partially screened from the view of remaining spaces. Hand washing sinks may be located within the toilet area or in the adjacent classroom for ease of supervision and to lower the amount of congestion that can occur in the toilet, especially before meal times.

Toilets are to be child-size for toddlers, but may be adult sized for pre-school children. They must be accessible to children with special needs.

Toddler and pre-school toilet areas should be durable, water-resistant finishes and bright, cheerful lighting. Recommended flooring include ceramic tile with integral cove base, and a ceramic tile wainscot to 915 mm above the floor with painted wall above.

Required features of the toilet area include:

- Toddler's toilet seat height of approximately 280 mm (including seat). Preschoolers who are four to five years old may be adult sized toilets.
- Floor drain.
- Toilet tissue dispenser next to toilet.
- Exhaust ventilation.

Required features of the hand washing sink include:

- Sink mounted at 555 mm above floor. Counters, 455 mm to 505 mm deep, allowing children to reach controls. Junior-height wash fountains may also be used with a wash

basin rim height of approximately 635 mm.

- Hot water temperature controlled to a maximum of 43°C. Hot water heaters should be placed where they are not accessible to children.
- Soap dispensers at each sink.
- One paper towel dispenser per sink area. Metered roll dispensers are preferred. The dispenser should not have a serrated edge which could cut children. However, the designer should consult with GSA building management and the RCCC to verify whether folded goods are preferred. Even though rolled goods are usually more economical and environmentally sensitive, some existing centers have noted that children often waste significant amounts of rolled goods because they lack the coordination to tear rolled paper easily.
- One free-standing pedal-operated waste receptacle per sink area. Do not use metal receptacles with any sharp edges
- Do not use built-in waste receptacles.
- Safety mirrors mounted at child height.

7.6.5 Diapering Station and Storage Areas:

A diapering station and diaper storage area is needed in each classroom serving infants or toddlers. Locate this area in an easily accessible, central location, but separate it from food preparation and eating areas. Orient the diapering station so that a teacher, while diapering a baby or toddler, can maintain visual supervision of the children, and the children can see the teacher. This component should be constructed as part of the fixed elements within the classroom for economy of plumbing connections.

The diapering station and storage area consists of a changing table, countertop with sink, waste bin, and upper storage cabinets for diapers and other supplies. All equipment and storage needed for this area must be within easy

reach for the teacher at the changing table, without requiring them to move away from the infant.

The diapering station should be designed to reduce possible transmission of blood-borne pathogens. The table should be easily sanitized or sterilized, and all material contaminated with feces should be stored in a hygiene safe manner in sealed receptacles.

Specific equipment at the diaper station includes:

- **Changing table:** A changing table should have an impervious surface. The top surface should be at the height indicated in figure 7.1. There must be a safety device on either side of the baby consisting of, for instance, a tubular rail to provide side restraint for 75 mm *above the surface of the mat*. Since mats are typically 25 mm thick, this means that the top of the rail should be approximately 100 mm above the surface of the changing table. The table should be dimensioned as per Figure 7.2. It should have a waterproof covered pad. (Check with local licensing for possible additional requirements.)
- **Hand washing sink:** The sink should have sloped sides and be within reach of the changing table. It should have hands-free or wrist-blade faucet controls. Diaper sinks should not have goose neck faucets because this type causes more splashing than standard faucets.
- **Paper towel, soap, and rubber glove dispensers:** These fixtures should be within reach of the teacher at the changing table. =
- **Open compartmentalized upper cabinets** should be approximately 230mm wide, 230 mm high and 305 mm deep.
- **Waste storage for disposable diapers** must be in a waterproof, washable container with a disposable plastic liner. The waste storage must be covered with an air-tight lid. It must be within reach of the teacher at the changing table and be operable without utilizing both hands. A pedal-operated waste container may be used, placed under the counter out of reach of children. If both cloth and disposable diapers are used, separate containers must be provided.
- **Movable or retractable steps** are necessary to help toddlers up onto the changing table. Steps are also particularly helpful for caregivers whose backs are often challenged by

excessive lifting when there are no stairs for this purpose. Check with regional coordinators for advice about purchased changing tables with integral, retractable steps.

The diapering station requires exhaust ventilation and should be free from drafts. A separate zone or a ceiling-mounted unit heater should be provided at the changing table to maintain a temperature 1.5°C to 2.5°C degrees warmer than the rest of the classroom. Recommended finishes include impervious flooring and millwork, countertops, and wall splash. Walls surfaces adjacent to the changing table should have impervious finishes. Because disinfectants are used to clean the changing table surface, finishes must be unaffected by these cleaning products.

7.6.6 Sleeping and Napping Areas:

Special areas for sleeping are provided in infant rooms, and often in young toddler rooms. Generally, there is not sufficient available space to allow for separate napping areas in older toddler and pre-school classrooms.

Infant sleeping areas should be quiet and pleasant in a somewhat separate space within the classroom where infants can sleep according to their individual schedules. Teachers must have visual and acoustical accessibility to this area at all times. Locate sleeping areas away from active areas. Separate this area with partial walls that are no higher than 1220 mm high. Do not install glass above as this may qualify the nap area as a separate sleeping area. Some licensing authorities would then require a teacher to be stationed in the nap room in such a case. Allow ample space for one crib per infant, placed

Figure 7.3: Infant Room Spatial Relationships

600 mm apart. When designing this area, the A/E must dot in cribs on all drawings even though GSA will provide them. This precaution will help ensure that the nap room will not only correctly sized, but also be configured properly to accommodate the necessary number of cribs.

Recommended finishes include carpeted floor and painted walls above an impervious wainscot or a washable, glossy paint or other washable surface. Lighting must be capable of being dimmed. Exterior windows require window treatment to control direct sunlight.

A crib must be provided for each infant and young toddler. One of every four cribs must be an

evacuation crib, especially constructed for this purpose, equipped with 100 mm wheels, and capable of holding and transporting up to five infants. The evacuation crib(s) should be placed closest to the emergency egress point and must be capable of easily passing through a 915 mm door. (Coordinate opening requirements with evacuation crib manufacturers.)

Sleeping areas must be equipped with smoke detectors. Special fire safety requirements for children's sleeping rooms can be found in the safety section of Chapter 10.

Older toddler and pre-school classrooms generally will not have space allocated for a sleep area, but will provide for napping cots which are stored within the classroom when not in use. A few cribs may be needed in a toddler classroom, but a separate sleeping space will not always be possible.

7.6.7 Nursing and Lactation Area:

A quiet, semi-private area in the infant classroom may be provided for a mother to visit and nurse her infant or for lactation purposes. Locate this space near the sleeping area with some visual separation from the other areas of the classroom and privacy from the circulation pathways. This space should be located near a sink and be as comfortable as possible, with adjacent counter space and a carpeted floor. Furnishings include at least one comfortable chair. This space is typically provided in or adjacent to the crib area.

7.6.8 Food Preparation:

All children will eat in their classroom with their teachers. A food preparation area must be provided in infant and young toddler classrooms for the purpose of storing and heating individual bottles and other prepared food brought from home.

Older toddlers, pre-school children, and school-age children are provided lunches and snacks, and do not require a food preparation area in the classroom. Their meals are prepared elsewhere through one of three methods: catered food service, on-site preparation, or lunches brought from home. All lunches brought from home must be appropriately stored with proper temperature maintenance.

Locate infant and young toddler food preparation areas with other fixed elements within the classroom. This area must be adjacent to the eating/table area and separated from the diapering station, toilet, and hand washing areas. Place food preparation areas near activity areas, providing teachers with clear views of the classroom. No food preparation area may be located under sewer or drain pipes concealed in the ceiling plenum above.

The food preparation areas in classrooms include the following heavy duty items:

- Upper and lower washable cabinet storage. Provide child-proof latches or locks to prevent child access to any storage within reach. Counter area. Provide an adult-scale impervious counter, a minimum of 2440 mm long with a back splash. Top of counter is to be 865 mm high. Drawer and door pulls should be non-projecting types. Hinges are to be heavy duty and durable as they receive intensive use in a child care center. One cabinet must be lockable.

- Sink. Equip the sink with a single-lever faucet, spray hose, and garbage disposal. Limit the hot water temperature to 43°C.
- Microwave oven.
- Bottle warmer, such as a crock pot.
- Refrigerator. Provide a minimum of 0.25 m³ (8 cubic feet) of refrigerator storage. Provide a lockable box in each refrigerator for storage of medication.
- Recommended finishes include impervious flooring and gloss painted wall above an impervious wainscot. Plastic laminate finishes include laminate countertop, cabinet face, and back splash. Use post formed counters with integral coves and bullnose. Ceiling tile should have washable facing.

7.6.9 Eating/Table Area:

Meal and snack times in the classroom are opportunities for children and their teachers to enjoy social interaction in small groups, much as the family might do in the home. A parent may join the child at the table to share lunch time. Usually, this area is part of the open, unrestricted portion of the classroom, and is used for other activities during the day.

Infants are held during bottle feeding while older infants who are able to sit may be placed in a low high chair while being fed soft foods. Traditional high chairs are not recommended due to risk of falling and tipping and the reduced opportunity for social interaction. Provide low stools for the teacher to sit on while feeding older infants. Provide a gliding chair or other comfortable chair for the teacher to sit in while bottle feeding. Locate the infant eating space near the food preparation area, away from the open, unrestricted area where other infants may be moving about. Young toddlers may be seated at the same round table.

Locate eating/table areas for older children in a central location, away from children's toilets and hand washing sinks, in a pleasant area with natural light and lots of displayed items of interest, such as plants. For toddlers and older children, the eating/table area is part of the general activity space.

Children older than infant age need movable chairs and tables of appropriate scale for their eating area. Storable tables might be used so that the room can be changed to accommodate other activities. Each toddler, pre-school, and school-age classroom must provide a separate, room-temperature drinking fountain, preferably in the eating area. Mount the drinking fountain at 560 mm above the floor in a central location on a plumbing wall for toddlers. For pre-schoolers and in general areas, mount at 810 mm.

Recommended finishes for the eating/table areas include sheet vinyl flooring and a vinyl wall covering or high gloss, washable painted wall.

7.6.10 Child-Accessible Display:

Shelving placed low to the floor allows children to easily see available curriculum materials and to make selections. These materials may be items such as books, art supplies and equipment, manipulative toys, large or small blocks, pull or push toys, and socio-dramatic materials. Open shelving, approximately 405 mm deep by 760 mm high, functions well for this purpose. Small items requiring further organization can be placed on this shelving in containers such as plastic tubs, or wire or wicker baskets. Shelving can be built-in millwork or freestanding movable units. Where appropriate shelving open on both sides should be considered as it creates more open feeling in the classroom. If shelving backing is used it should be attractive and useful. For instance, it may be mirrored with non-breakable reflective material. The movable units lend greater flexibility, though they must be equipped with locking casters. A combination of built-in and freestanding units will offer the best design solution. It must be noted that some state and local codes may require these units to be fixed to the floor.

7.6.11 Classroom and Teacher Storage:

It is essential for classroom design to include adequate storage for the many items required for a quality program. Nothing conveys a cluttered, chaotic and shoddy impression than inadequate storage. This is often overlooked. Storage for cots, strolling equipment, curriculum materials, and supplies is necessary. Use of doors on storage areas should be minimized for several reasons including finger entrapment and the greater possibility of abuse when there is inadequate supervision. When doors are deemed necessary, they must have full vision panels, and their hardware should always allow a child trapped there to exit when the door is locked from the outside. Alcoves (without doors) can function well for storing the kinds of cots which have been designed to be stackable and are attractive enough to leave exposed.

Provide some lockable storage within the classroom, including some cabinets elevated above children's reach or with a door to limit their access. There is to be one lockable cabinet in each run of cabinets. This storage area is required for storing classroom equipment, materials, and supplies. Hooks and pegboards can provide easy storage of aprons and small equipment. Other areas of storage might include overhead storage in a food preparation area. Provide a lockable cabinet, above child's reach, for storage of items such as medications, cleaners, and other restricted items. Refrigerated medications will be stored in the refrigerator at the kitchen or food preparation area in a locked container.

7.6.12 Teacher Storage:

Some lockable storage must be provided in the classroom for teachers to store outdoor clothing and other personal belongings. This storage may be provided in the storage area or in cabinets intended for the teacher's use. A teacher closet with a rod for hanging coats and shelving above is preferable.

In addition to the spaces required in the classroom, the discussed below are spaces located elsewhere in the center and provide specialized activity settings for use by children, teachers, and parents. These areas should not be considered part of the minimum activity square foot-

age area required in the classroom.

7.6.13 Multiple-Purpose and Large-Motor-Activity Spaces:

Consider providing a versatile, large, open area for activities, if space is available space. Such spaces are less important where climate is temperate enough to allow extensive use of the exterior and a play yard is available. A multi-purpose is mandatory where climate forces gross motor activity that would occur typically on a playground to take place indoors. The space can also be used for group gatherings or meetings. Locating the multi-purpose room near the kitchen and including a pass through can increase the versatility of the room. Multiple-purpose space should be flexible enough to offer a variety of opportunities for large motor activity. Multi-purpose space must also be provided if adequate outdoor play yard space is not available in the short term but should never be considered an adequate permanent substitute for exterior play. Play equipment should be carefully considered to ensure that it will work well within the confines of an enclosed room which may have features, such as sprinklers and pendant-hung lighting fixtures to be accommodated. Windows are of less importance than in classrooms, although natural lighting from non-breakable skylights would be highly desirable, as well as energy efficient. The space may have movable partitions or perhaps a carpeted raised area for dramatic play.

Provide the following architectural features where possible in the multiple-purpose area:

- High ceilings
- Acoustical treatment on walls and ceilings, together with possible acoustical separation between the multi-purpose and the adjoining rooms.
- Impervious flooring. If carpeted areas are desired for soft areas, they should be provided by non-slip area rugs.
- A hard, durable, washable surface as wall finish.

The following architectural features and equipment are required for large motor activities:

- Play equipment
- Protective resilient surfaces in fall zones
- Hard surface pathways for wheeled toys
- Storage for equipment and supplies

7.6.14 Sick Bay:

The sick bay is used for temporary isolation of ill children until they can be taken home. In

some locations a sick bay is required but, in fact, they appear to be rarely used. Typically a sick child will wait on a cot in an alcove adjacent to the center directors office, if state licensing allows, rather than being secluded.

If the sick bay is a separate space, locate it adjacent to the director's office and near a toilet. Provide a cot or bed with a night light. This area should have simple, pleasant, cleanable finishes, and lockable storage for first aid supplies. A bookshelf for the storage of books and toys would be appropriate. A view to the exterior is preferred.

7.6.15 Service Spaces:

Spaces for service areas such as kitchen, laundry, janitor's closet, and telephone equipment room should be located to the rear of the facility near the service entrance, removed from children's activities. Major food staging and serving activities should be centralized in a kitchen area. The service areas, in general, should not be accessible to children, although children can be provided views of interesting activities occurring in the kitchen. For example, it is desirable to locate the multi-purpose area near the kitchen, which makes it easy for children to work on cooking projects (such as making cookies and placing them on baking sheets). Such an arrangement also provides a venue for group lunches and other gatherings. The kitchen should be located near the pre-school classrooms since these children are primary users of the kitchen.

7.6.16 Kitchen:

The type of food service that will be provided to the center impacts the scope and size of the kitchen area. The Guide does not deal with standards, codes, and requirements for full commercial kitchens with deep fat fryers, ventilation hoods and the like. If the center includes a kitchen of this type, it is recommended that a food service specialist be consulted as part of design services.

The baseline in the Guide provides a kitchen with heavy duty equipment that will function primarily only as a warming area for food or snacks, and a staging area to receive catered meals. Large centers may have two kitchen areas. Typically, the A/E should not design a commercial kitchen on a scale that may trigger the need for sophisticated venting and hood-mounted fire suppression equipment. Especially in existing buildings, this type of commercial kitchen could force expensive modifications that could severely impact the rest of the building, which would not be feasible. For instance, in a multi-story building, it may require openings through several floors as well as through the roof structure to accommodate a vent duct.

The kitchen should be accessible to service personnel, staff, and other adults. For safety reasons, children will not be in this space unless escorted by an adult and dangers such as hot oil are not present. The kitchen should be placed in a central location with access to the service entrance, near the multiple-purpose area, and separate from the classrooms. Provide the following:

- Stainless steel, three-compartment, deep sink with required plumbing with hot and cold water connections near the dishwasher. Gooseneck is recommended.
- Separate hand washing sink.

- Garbage disposal with required plumbing connections.
- Floor drain.
- Heavy duty, commercial-type dishwasher.
- Commercial-type refrigerator storage at or below 4°C and freezer storage at or below -18°C. (Many centers will require two refrigerators and one or two commercial freezers. This needs to be clarified during initial design meetings.)
- Microwave oven.
- Convection oven.
- Residential range.
- Adequate 610 mm minimum deep counter space.
- Closed storage for dry food, equipment, and supplies on wire metal shelves.
- Recycling bin.
- Commercial-type kitchen equipment with highly washable finishes such as stainless steel.
- “Dietitian corner” with telephone to use when ordering food.
- Ample easily washed, metal cabinets with interior shelving within reach of cooks.
- Stainless steel countertops and highly washable, seamless wall surfaces made for kitchens.
- Impervious, durable, easily cleaned floor finish.
- Washable ceiling finish.

It is vitally important to provide space for two or more stainless steel food carts. Adequate lighting, ventilation, and clearances are required. Locked storage for any hazardous materials must be provided. For food not requiring refrigeration, provide clean, dry, well ventilated storage off the floor. Shelving in kitchen areas should not be exposed wood as this is difficult to clean adequately. Metal wire shelving is the best choice for this purpose. Provide storage for all utensils and equipment off the floor in a clean, dry, closed space. No sewage or drain pipes are allowed above food storage, preparation, or service areas. Ample electrical outlets (with ground-fault interruption in wet areas) out of children’s reach, must be provided.

7.6.17 Laundry:

The laundry room is accessible only to adults. Locate this area near the infant/toddler class-

rooms, if possible, and convenient to the food service areas. For acoustical purposes and to ensure adult controlled access, locate the laundry room away from children's areas and provide a lockable door (that is openable from inside). Ideally, the laundry room should be located close to an exterior wall to minimize the run of the dryer exhaust vent length to the exterior. Note that dryer exhausts contain combustible lint which can present a fire hazard when the exhaust vent is excessive. Dryers must be vented separately and not be combined with other building exhaust systems.

Recommended equipment includes a heavy-duty residential-type washer and dryer. Large centers may require additional equipment. Provide an electrical power outlet, venting, plumbing connections, floor drain, deep sink, and millwork with closed, lockable storage. If space and budget allows, it is desirable to include a dishwasher in this area to wash toys that are often soiled from being in children's mouths. There must be a counter for folding clothes and wall lockable cabinets for cleaning supply storage.

7.6.18 Janitor's Closet:

Service personnel and staff use this space for storing janitorial supplies and equipment. Include a mop sink with plumbing connections and storage for pails, mops, vacuums, and related cleaning supplies and equipment. The door should have a lock, (which is openable from the inside) and cabinets for cleaning supplies which must be lockable. Provide exhaust ventilation. Ensure that the closet is provided with proper fire detection devices as per code.

7.6.19 Service Entrance:

A key-access service entrance is needed by service personnel to deliver food and supplies, and for trash removal. This entrance should be accessible to maintenance and kitchen staff. Locate the entrance next to service areas, away from the front entry and from children's activity areas.

7.7 Mechanical/Electrical/Telephone Equipment

Except when they are free-standing buildings, centers will typically be provided with mechanical service by the main building central plant. When free-standing, interior space must be provided for mechanical equipment, or rooftop equipment will need to be used. However, the decision to use rooftop equipment should be carefully weighed by the designer. The decision should not be based on first cost alone, due to the additional maintenance and possible damage to the roof that this configuration entails. This precaution is particularly applicable to regions of the country with significant precipitation. GSA is particularly interested in equipment and systems which will have low long-term operating and maintenance costs.

Space for telephone service must be centrally located and separate from the children's areas, although a dedicated telephone closet is not always necessary. If one is provided, it should have a lockable door that is not accessible by children (but will also not allow

children to be locked inside). Finishes include painted walls and a sealed concrete floor.

CHAPTER 8: FURNISHINGS AND EQUIPMENT

This chapter provides general criteria regarding furnishings and equipment for the center, including references to applicable codes and regulations. At the end of the chapter is a list of the furnishings and equipment provided by the Federal Government as part of the baseline provisions.

8.1 General Criteria

General criteria recommended by NAEYC for furnishings and equipment are as follows:

- Age appropriate
- Sufficient quantity
- Sufficient variety
- Durable
- Readily accessible

Additional general criteria for center furnishings and equipment are listed below:

- Child-scale for child use
- Adult-scale for adult use
- Safe
- Able to be easily cleaned
- Adaptable, flexible, movable
- Dual purpose, where appropriate
- Stackable/hangable, if possible
- Do not convey an institutional impression

- Soft and “cushy,” where appropriate
- Optimize the use of natural materials. Furnishings should contain minimal amounts of formaldehyde and other chemicals which may affect children (particularly those with allergies.)
- Texture-rich
- Calm, soothing, coordinated color schemes

Furnishings and equipment within the center shall meet all applicable codes and standards. The following have established criteria pertaining to play equipment for all age groups of children which must be referenced.

- Consumer Product Safety Commission
- American Society for Testing and Materials (ASTM) for Juvenile Products

Below is a reference list of ASTM requirements specific to a child care center. Refer to the most recent standards.

- Chairs with high sides or foam nests for infant feeding - ASTM F-404
- Cribs - ASTM F-966 and ASTM F-1169
- Carriages/strollers - ASTM F-833
- Gates/enclosures - ASTM F-406
- Hook-on chairs - ASTM F1235
- Toy safety - ASTM F-963

Evacuation cribs are required for all infant and young toddler groups, one for every four children. These special cribs must be of durable construction, be narrow enough to pass through a 915 mm door, and have sturdy caster wheels approximately 100 mm in diameter which allow one person to easily roll the cribs over different indoor/outdoor surfaces. The evacuation crib must have the capability of supporting and transporting a minimum of five 18-month-old children weighing a total of 55 kg. The evacuation cribs will be placed closest to the exit in the sleeping rooms. They also function as a standard sleeping crib.

8.1.1 Storage:

Adequate Storage space which is easily accessible and near at hand must be provided for items such as carriages and strollers, wheeled toys, and cots or mats for pre-school classrooms. In the initial design process, the designer should elicit the number and approximate size of anticipated equipment that will need to be stored.

Storage within the classrooms should be of adequate amount to allow the classroom to appear uncluttered when occupied and should meet functional needs. A combination of low open shelving, baskets, drawers, cabinets with doors, boxes, chests, hooks that do not present a hazard, adult height shelves, wall-hung cabinets, storage bags, buckets, crates and bins may be utilized.

8.1.2 Flammability Codes and Standards:

All textiles and upholstered components must comply with the applicable interior finish requirements stated in PBS-PQ100.1a and any other local, state, or federal standards which may apply. In addition, compliance with the following is mandatory:

8.1.3 Upholstered Furniture:

Must meet the following criteria:

- NFPA 260: Pass
- Consumer Product Safety Commission, FF-4-72 (mattresses and pads): Pass
- NFPA 260: Class I
- Draperies, Curtains, Banners, Canvas, Decorative Hangings
- NFPA-701 (small and large scale): Pass

8.1.4 Chemicals:

- Volatile Organic Compounds (VOC): Carpets must have been tested for VOC's and bear a green label from the Carpet and Rug Institute indicating that the carpet emissions are within the acceptable range.
- Formaldehyde: Products should contain less than 0.05 parts per million (ppm) of formaldehyde. Any product purchased with formaldehyde levels above 0.05 ppm must bear a label in accordance with 29 CFR 1910.1048.

8.1.5 Safety:

Edges, including shelving, table tops, and counters must have 13 mm rounded edges. Furnishings in children's areas that are 900 mm or higher must be secured in place. Local codes may require all large furnishings to be secured in place. Mirrors must be safety glass, acrylic, or reflective metal.

8.1.6 Storage Units:

Storage units for the children must be visible, accessible, and easy to utilize. Units may be used for dual purposes, such as serving as a space divider as well as storage. They may be movable with locking casters (except where local codes prohibit), and should be designed to prevent climbing. Shelving that is open on both sides helps to create an uncluttered, light appearance in the room. Sometimes a back to the shelving unit is desirable, but ones with unattractive backing that do not look integral with the rest of the piece should be avoided.

8.1.7 Seating:

Adult seating in the infant and toddler classroom should be soft and comfortable to provide a place where teachers can nurture children. Child-scaled seating can include upholstered or exposed frame chairs, foam cubes, carpeted constructed seating, or cushions and pillows. To avoid suffocation, bean bag pillows should not be used for infants.

8.1.8 Tables and Chairs:

Tables and chairs should be scaled to the child. Table height for infants should be approximately 300 mm; for toddlers, 400 mm; and for pre-school children, 500 mm. Chair seating heights for toddlers should be 250 mm; for pre-school children, 300 mm. Infants and toddlers require high-sided chairs. Seating shall have backs and arms with a seat height of approximately 200 mm to 300 mm for pre-kindergarten; 300 mm to 425 mm for kindergarten age and older. Work surfaces or tables should have appropriate knee clearance for children in wheelchairs and shall be 600 mm above the finished floor by 600 mm deep by 750 mm wide. Top surface height should be a maximum of 50 mm higher than knee clearance. Adjustable height is preferred.

8.1.9 Countertops:

Countertops used by toddlers should be approximately 450 mm above the finished floor and 550 mm for pre-school. Counter depth should be 450 mm to 500 mm when accessed from only one side. Consider counters that children can access from both sides encourages socialization. In such case, the counter should not be less than 610 mm.

8.2 Playground Equipment

The basic purpose of children's playground equipment is to stimulate play and offer challenges while safeguarding the child and minimizing hazards. Play structures should be versatile, allowing opportunities to rearrange elements for imaginative play.

Major parameters in determining quality in playground equipment are durability, low maintenance, safety, functionality, challenge, and appeal to the child. All equipment shall comply with the U.S. Consumer Product Safety Commission and their current document, *Handbook for Public Playground Safety*.

Safety guidelines regarding playground equipment shall be followed. Refer to ASTM F1148-88 (Home Playground Equipment) and ASTM F15.29 (Entrapment, Installation and Maintenance, Materials, Terminology, Falls, Environmental), ASTM 1487-95, PS 83-97, F1292 and the Consumer Product Safety Commission requirements. Refer also to the American Public Health Association and American Academy of Pediatrics in the publication *Caring for Our Children; National Health and Safety Performance Standards: Guidelines for Out-Of-Home Child Care Programs*, 1992, particularly Appendix 0-1 through 0-12, for recommendations on playground equipment.

Major types of playground equipment are:

- Slides
- Tire swings
- Climbing equipment
- Sand and water table
- Playhouses
- Benches/seating
- Crawl-through structures
- Table/seating
- Balancing equipment
- Wheeled toys
- Platforms/lofts
- Trash receptacles

Guidelines to accommodate the disabled on playgrounds are currently under study. Information about the status of this work is available through GSA's regional coordinators. When finalized, these guidelines must be followed.

8.3 Furniture and Equipment List

The following furnishings and equipment may be supplied to GSA child care centers as part of the baseline provisions. Provisions vary according to center size, ages served, and the amount of built-in equipment provided, and may be more or less than is listed below. Equipment for each classroom and other individual spaces within the center are listed separately. Quantities are stated in a ratio of equipment per child or in total number per room as noted. The Regional Child Care Coordinator must approve requests for items to be purchased by the Federal Government. Many of the provisions below will be provided on a one-time, start-up basis to be replaced by the Provider as needed. GSA Regional fire safety personnel should be consulted if there is any question about the flammability of upholstered furniture.

Table 8.1: Infant Classroom

Note that the dimensions below are in feet and inches, as US children's furniture manufacturers typically do not market their equipment in metric dimensions.

Sleeping Area	Crib and mattress (1 per child)
	Crib sheet (2 per child)
	Blanket (2 per child)
	Adult rocking chair/glide rocker (1 per 4 children)
	Evacuation crib and mattress (1 per 4 children)
	Air purifier
	Half height gate between play and napping area

Diapering Area	<ul style="list-style-type: none"> Diaper pail w/ foot pedal lid (2) Compartmentalized shelving over diaper changing table Half height gate between play and changing area Diaper changing table
Cozy Area	<ul style="list-style-type: none"> Floor pillow (1 per child) Horizontal safety mirror w/ wood frame Vinyl-covered padded floor mat (2) Solid color area rug (2) Set geometric pillows (2) Bean bag chair (2) Child view display Pull up bar with mirror 24" high, wood storage cabinet (2) Small futon or junior size mattress Wood wall-mounted adult storage (2)
Messy Area	<ul style="list-style-type: none"> 5" (seat height) wood chair (1 per child) 12" high wood table (1 per 4 children) Indoor separation fencing between crawl space and eating area Microwave oven Dishwasher (for disinfecting mouthing toys) Refrigerator with lockable medication storage 24" high, hinged wood storage unit Toddler water play table 24" wood frame cork board (2) Bottle warmer
Active Area	<ul style="list-style-type: none"> Foam pyramid including ramps Compact disc player Small carpeted riser Large carpeted riser Picture display Infant shelf Boot locker (2)
Storage/Entry	<ul style="list-style-type: none"> Collapsible double umbrella stroller *Multiple passenger stroller (1 per 4 or 6 children) White erase board Lockable storage for teacher's belongings Personal storage for diaper bags Small pigeon hole boxes for parent notices Sign in counter <p>*depends on center location and playground access</p>

Table 8.2: Younger Toddler Classroom (12-24 Months Old)

Diapering Area	<ul style="list-style-type: none"> Diaper pail w/ foot pedal lid (2) Compartmentalized shelving over diaper changing table Half height gate between play and changing area Diaper changing table w/ steps
Cozy Area	<ul style="list-style-type: none"> Floor pillow (1 per child) Vertical safety mirror w/ wood frame Vinyl-covered padded floor mat (2) Solid color area rug (2) Set geometric pillows (2) Bean bag chair (2) Child view display 24" high, wood storage cabinet (2) Small futon or junior size mattress

	<p>Wood wall-mounted storage cabinet (3)</p> <p>Adult rocking chair/glide rocker</p> <p>Air purifier</p> <p>Infant reading pocket (2)</p>
Messy Area	<p>6" or 6 ½" (seat height) wood chair (1 per child)</p> <p>14" high wood table (1 per 4 children)</p> <p>Microwave oven</p> <p>Dishwasher (for disinfecting mouthing toys)</p> <p>Refrigerator with lockable medication storage</p> <p>24" high, hinged wood storage unit</p> <p>24" wood frame cork board (2)</p> <p>Toddler water play table</p>
Active Area	<p>Infant loft</p> <p>Compact disc player</p> <p>Small carpeted riser (2)</p> <p>Large carpeted riser</p> <p>Picture display (2)</p> <p>Infant shelf</p> <p>Boot locker (2)</p> <p>Crawl through tunnel</p> <p>Small dowel climber</p> <p>Tracking tube</p> <p>Nursery climber</p>
Storage/Entry	<p>Collapsible double umbrella stroller</p> <p>* multiple passenger stroller (1 per 4 or 6 children)</p> <p>White erase board</p> <p>Lockable storage for teacher's belongings</p> <p>Personal storage for diaper bags</p> <p>Evacuation crib and mattress (1 per 4 children)</p> <p>Cot or 2" bicolor mat (1 per child)</p> <p>Cot or mat storage</p> <p>Sheet (2 per child)</p> <p>Blanket (2 per child)</p> <p>Small pigeon hole boxes for parent notices</p> <p>Sign in counter</p>
*depends on center location and playground access	
Table 8.3: Older Toddler Classroom (24-36 Months Old)	
Diapering/Toilet Area	<p>Diaper pail w/ foot pedal lid (2)</p> <p>Diaper changing table w/ steps</p> <p>Half height gate between play and changing area</p> <p>Compartmentalized shelving over diaper changing table</p>
Reading Area	<p>Floor pillow (1 per child)</p> <p>Solid color area rug (2)</p> <p>Toddler reading pocket (2)</p> <p>Bean bag chair (2)</p> <p>Picture display (2)</p> <p>Small adult sofa</p> <p>Aquarium</p>
Art/Eating Area	<p>10" (seat height) wood chair (1 per child)</p> <p>Utility cart</p> <p>Refrigerator with lockable medication storage</p> <p>Toddler sand & water table w/ lid</p> <p>Toddler water play table</p> <p>Low easel (2)</p> <p>24" high, hinged wood storage unit (2)</p> <p>16" high wood table (1 per 6 children)</p> <p>36" wood frame cork board (2)</p>

Block Area	Wood wall-mounted storage cabinet (3) Cardboard blocks Tracking tube Small carpeted riser Large carpeted riser Wooden puzzle case w/ wood puzzles 24" high, wood storage cabinet (3)
Dramatic Play	Vertical safety mirror w/ wood frame 24" wood frame cork board (2) Toddler play furniture set Child-size chest of drawers Child-size round table and 4 chairs Child-size sofa & chair Wooden doll bed (2)
Active Area	Rocking boat Toddler loft Large dowel climber Crawl through tunnel Compact disc player
Storage/Entry	Cot or 2" bicolor mat (1 per child) Sheet (2 per child) Blanket (2 per child) Children's personal storage Cot or mat storage White erase board Lockable storage for teacher's belongings Small pigeon hole boxes for parent notices Sign in counter

Table 8.4: Three-Year-Old Classroom

Reading Area	Floor pillow (1 per child) Solid color area rug Toddler reading pocket (2) Bean bag chair (2) Picture display (2) Small adult sofa Aquarium Library display unit Flannel board
Art/Eating Area	Utility cart Drying Rack (2) Refrigerator with lockable medication storage Sand & water table w/ lid 12" (seat height) wood chair (1 per child) 18" high wood table (1 per 6 children) Low easel (2) Chalkboard 24" high, hinged wood storage unit (2) 36" wood frame cork board (2)
Block Area	Wood wall-mounted storage cabinet (3) Cardboard blocks Wooden puzzle case w/ wood puzzles 24" high, wood storage cabinet (3) Doll house w/ furniture Set wooden unit blocks w/ storage Set of small hollow wooden blocks Wood train set w/ tracks

Dramatic Play	Vertical safety mirror w/ wood frame 24" wood frame cork board (2) Child playhouse refrigerator Dress up tree (2) Child playhouse sink Child playhouse stove Child-size chest of drawers Child-size round table and 4 chairs Child-size sofa & chair Wooden doll bed (2)
Active Play	Rocking boat Compact disc player Preschool loft Balance boards & blocks Tracking tube Small carpeted riser Large carpeted riser (2)
Storage/Entry	Cot or 2" bicolored mat (1 per child) Sheet (2 per child) Blanket (2 per child) Children's personal storage Cot or mat storage White erase board Lockable storage for teacher's belongings Small pigeon hole boxes for parent notices Sign in counter

Table 8.5: Four-Year-Old Classroom

Reading Area	Floor pillow (1 per child) Solid color area rug Toddler reading pocket (2) Bean bag chair (2) Picture display (2) Small adult sofa Aquarium Library display unit Flannel board
Art/Eating Area	Utility cart Drying Rack (2) Refrigerator with lockable medication storage Sand & water table w/ lid 14" (seat height) wood chair (1 per child) 20" high rectangular wood table (2) 20" high square wood table (2) Low easel (2) Chalkboard 24" high, hinged wood storage unit (2) 36" wood frame cork board (2)
Block Area	Wood wall-mounted storage cabinet (3) Cardboard blocks Wooden puzzle case w/ wood puzzles 24" high, wood storage cabinet (3) Doll house w/ furniture Set wooden unit blocks w/ storage Set large hollow wooden blocks Wood train set w/ tracks

Lamp
 Book shelf
 Infant car seat (for loan)
 Toddler car seat (for loan)
 Slotted box for tuition checks
 Small adult sofa
 Small pigeon hole boxes for parent notices

Table 8.10: Office

Computer printer w/ multiple hookup capabilities
 Copy machine
 Fax machine
 Lockable storage cabinet (first aid)
 Desks (2)
 Computer tables (2) Office chairs (2)
 Adult guest chairs (2)
 Personal computer (2)
 Filing cabinets (4)
 Book shelves (2)

Table 8.11: Sick Bay

Cot or mat (for sick child)
 Small shelf for books, quiet toys

Table 8.12: Conference/Training Room

Television with VCR player (for training)
 Book shelf
 24" wood frame cork board
 Dry erase white board
 Conference table
 Laminating machine
 Multiple level butcher paper holder
 Paper cutter
 Label maker
 Desk
 Computer table
 Office chair
 Adult chairs (10)

Table 8.13: Teachers' Lounge

Round table & chairs (4)
 Mini-refrigerator
 Microwave
 Adult sofa and lounge chair
 Storage cabinets (if not built in —built in preferable)
 Art waxer machine to facilitate hanging children art (2)

Table 8.14: Outdoor Play Yard

Infant/toddler climbing equipment
 Low toddler climbing equipment
 Pre-school climbing equipment
 Shade device
 4 storage sheds
 1800 mm to 2400 mm high fence
 Wagons (4)
 Preschool sand and water table (1)
 Toddler sand and water table (1)
 Child size picnic tables (4)
 Basketball hoops (2)
 Crawl tunnel (2)
 Plexiglass easel (2)
 Outdoor dramatic play furniture
 Playhouse (2)
 Sand box (2)
 Large set permablocks

CHAPTER 9:

INTERIOR FINISHES

This chapter provides a consolidated discussion of the types of finishes required in child care centers, establishes the baseline finishes, and discusses acceptable options.

9.1 General Requirements

Because safety is of the utmost importance, finishes must meet all smoke and flame spread requirements in PBS-1a, and any other local, state, or federal standards that may apply. In addition, the designer must consider the off-gassing and toxicity of materials. Children are more vulnerable to toxic materials for several reasons: First, they absorb a greater proportion of the materials they come in contact with than adults. Children take in more air water and food per pound of weight than adults do. Cells that are developing are more vulnerable to toxins than developed cells of adults and have a long period in which to develop disease after exposure to toxins.¹ As a result, the following rigorous requirements are mandatory:

- Carpets must have been tested for Volatile Organic Compounds (VOC) and bear a green label from the Carpet and Rug Institute indicating that the carpet emissions are within the acceptable range.
- The carpet must meet the State of Washington Standards. Adhesives are to be the least toxic, effective products. Reference the *AIA Environmental Resource Guide, with 1997 Supplement*.
- The carpet must be recyclable to reduce contribution to the nation's waste stream as per Executive Order.
- Formaldehyde: Products should contain less than 0.05 parts per million (PPM) of formaldehyde. Any product purchased with formaldehyde levels above 0.05 PPM must bear a label in accordance with 29 CFR 1910.1048. Provide chamber tests of materials to substantiate formaldehyde content.
- Allow adequate time in the construction schedule to ventilate gas-containing materials. In new centers, allow up a month between the installation of materials which need to off-gas and the occupancy of the center. Renovations should allow the maximum feasible time to off gas, up to one month, but in no case less than one week. Use mechanical means, if necessary, to ventilate the space once renovation is complete.

Durability, maintenance requirements, life cycle costs, appropriateness, and aesthetics of materials must be considered when choosing finishes. In addition, the selection must be environ-

mentally sensitive, including the use of recycled materials when possible and the ability to recycle the specified products once they are worn out.

Finishes should feel “home-like”. For instance, small scale finish materials such as bricks are typically preferable to large precast panels because the brick’s dimension is more congruent with the size of a child and his or her home experience. Finishes should emphasize natural materials, which harmonize a variety of textures, colors, and shapes.

All construction should be designed for safe use by children and should comply with the following criteria:

- Rounded (bullnosed) outside corners (minimum radius 13 mm)
- Non-toxic finishes
- Finished hardwood is to have eased edges to reduce splinters
- Slip-resistant floor coverings
- Sealed seams and joints for sanitary cleaning and reduction of tripping hazards
- No projecting connections
- Impervious finishes at wet areas
- Protective resilient fall zones under interior climbing equipment in accordance with the *Handbook for Public Playground Safety*, US Consumer Product Safety Commission
- Add additional protection for gypsum wallboard, such as veneered plaster or some other means to “toughen” otherwise vulnerable surfaces in high use areas such as multi-purpose rooms and corridors

9.2 Color and Texture

Both color and texture have a great impact on children. The sense of touch is directly related to cognitive development, and color has far reaching effects which influence behavior. While cool colors tend to have a calming effect, and warm colors tend to create warmth and excitement, a consistent extreme of either in a center is not desirable.

9.2.1 Use of Color:

The overuse of strong color scheme should be avoided, as this may result in over-stimulated, excited behavior. The predominant color, above the level of the wainscot should be neutral and in general, an off white. Apply stronger, more vivid colors only as accents in smaller areas. Bear in mind that children’s clothing is usually much more colorful than that of adults, and their toys and art add a great deal of color to the environment. Therefore, little “color statement” is required on the part of the designer. Do not use primary colors on walls — they can only be used as accents. Too little color is better than too much in an environment where children will

spend a great deal of time. Avoid complex patterns on walls and floor coverings. Select colors appropriate to the activity, using color cues to identify particular areas. Warm (as opposed to bright) hues are preferred, when appropriate. Once the color scheme has been selected as part of the design effort, it can be changed only with the approval of the RCCC.

9.2.2 Use of Texture:

Provide a variety of textures on surfaces within reach of children, especially for infants and toddlers. Utilize soft textures whenever possible, especially in quiet or sleeping areas to promote relaxed and quiet behavior. Hard textures are more appropriate for large motor activity areas where livelier behavior occurs. The use of subtle, varied, natural textures is highly encouraged as they are soothing and interesting to children.

9.3 Types of Finish Materials

The following sections contain guidelines for finishes for floors, walls, and ceilings, and discuss issues to consider when selecting finishes.

9.3.1 Wall Finishes:

- **Paint:** Paint must be non-toxic with 200 grams/liter of VOC or less. The paint must comply with GSA Federal Specification TT-P-2846 which requires that paint contain a minimum of 50% post consumer waste paint taken from community collections. In addition, it must be lead and chromate free as defined by Department of Housing and Urban Development guidelines and must not contain any of the EPA 17 chemicals. GSA offers such environmentally sensitive paint. More information is available on the Internet from GSA's Paints and Chemicals Center at 1-800-241-RAIN (7246) or *GSA Advantage!* at <http://www.gsa.gov>. The email address is paintschemctr.auburn@gsa.gov.
- **High build coatings:** Very durable and able to be scrubbed. Locate in high-wear areas. Allow ample time to off-gas in projects where specified.
- **Glazed coatings:** Appropriate for wet areas.
- **Vinyl wall covering, Type II:** Durable with Oznaburg fabric backing. Vinyl wall coverings are to be neutral in color and able to be scrubbed. Allow ample time to off-gas in projects where specified. Reference the AIA Environmental Resource Guide with Supplements for guidance on adhesives. Vinyl coverings typically may require corner guards to deter delamination at corners in a high use facility such as a center. Ensure that corner guards have a minimum 13 mm radius bullnose.
- **Textiles on vertical surfaces within reach of children** are not recommended, but work well for surfaces such as bulletin boards above children's reach..
- **Glazed Ceramic tile:** Appropriate for wet areas such as toilets and kitchens. Ceramic tile is durable, non-porous, and very cleanable, especially if grout material is epoxy. Sound deflection can be a problem with this finish.

- Display surfaces: Chalkboards, marker boards, magnet boards may be provided as a wainscot up to 900 mm or higher. Display systems requiring tacks are not allowed and tape may damage finishes. The baseline amount of space available for display for each classroom will be 2400 mm long and 900 mm high. GSA will provide “art waxer” equipment which allows children’s art to adhere to finishes without clamps, tacks or tape.
- Mirror: Provide shatterproof mirror surfaces, particularly in crawling and toddler areas. Provide grab bars in front of mirrors for infants and toddlers. Mirrors shall be safety glass, acrylic, or reflective metal. Baseline amount of mirror space for infants and toddlers will be 1800 mm long, 450 mm high per classroom.

9.3.2 Floor Finishes:

- Carpet: Most appropriate in quiet areas and crawling spaces. Carpets can retain dust and other allergens to which many children are particularly susceptible, so fixed carpet over a large area is not recommended. The selection criteria for carpet should include a high-quality yarn system (currently type 6.6 nylon) with inherent stain resistance, a minimum face yarn density of 5000, low level loop or cut pile construction (maximum pile height, 6 mm), a minimum of 10 stitches per 25 mm, anti-microbial feature, and 1800 mm minimum wide goods with a backing system. The recommended backing system should be permanently bonded, with a permanent moisture barrier, installed with factory pre-applied adhesive, and seams sealed on-site.. The designer also should consider using a carpet with subtle flecks, patterns or color variation which do not accentuate wear. Reference the AIA Environmental Resource Guide, 1997 Supplement for environmental recommendations including the types of adhesive to be used.
- Sheet vinyl: Recommended for children’s toilets, wet areas, and kitchens. Sheet vinyl is capable of receiving chemically sealed seams at joints and integral cove base to create a moisture barrier. Provide a high quality commercial grade with a high vinyl content, a minimum 1.3 mm wear layer and 860 kPa. Provide slip resistant materials in wet areas. The designer also should consider using material with subtle flecks, patterns or color variation which do not accentuate scuffs and wear. This material is not to be used if adequate time to off gas, as defined above, is not available. Reference the *AIA Environmental Resource Guide, with Supplements*. Resilient vinyl tile: While this material is economical, it requires higher maintenance than sheet vinyl. Although it is durable and able to be scrubbed, it cannot form a moisture barrier because it has many joints. This material is not to be used if adequate time to off gas, as defined above is not available.
- Linoleum: A natural material without the off-gassing problems associated with vinyl. It is very durable and can be used in similar conditions as vinyl.
- Fluid applied flooring: This material can be costly but is durable and easily cleaned, and can create a moisture barrier. However, it can create an undesirable, institutional appearance. This material is not to be used if adequate time to off gas, as defined above is not available.

- Sealed concrete: Economical and appropriate for hard surface areas. With an appropriate admixture, stain and finish, it can overcome the connotation of the “unfriendly” or “industrial” which is often associated with raw concrete.
- Rugs: Provide comfort, and are economical. Tripping/slipping hazards created by rugs must be addressed through use of proper underlayment pads designed for rugs or by the use of effective edge binding and transitions. Non-slip surfacing on the reverse side of “throw” rugs is essential.
- Ceramic mosaic tile: Appropriate and decorative for wet areas,. Tile used must be slip resistant.

9.4 Ceilings

- Because it is economical, the majority of children’s areas will have acoustical ceiling tile, 20 mm to 25 mm thick, with effective acoustical ceiling treatment. Where fluorescent fixtures which are integral with the ceiling must be used because the ceiling is too low, 600 x 600 mm fixtures will render a less institutional appearance and offer greater flexibility. Where feasible, they should be used. However, the designer should consider the benefits of incorporating other materials which will render a more home-like environment such as gypsum board bulkheads and soffits where practical, as well as a variety of lighting type.
- Painted gypsum board is appropriate in areas with soffits, ceiling height changes, vaults, or wet areas. Do not use gypsum board for ceiling areas where service access is required in the ceiling plenum for plumbing, HVAC, or other equipment.
- Exposing structural ceiling elements provides children an interesting environment, and may increase the perceived height in low spaces, but this can also require additional acoustical treatment such as the addition of acoustical baffles.
- Luminous ceilings should not be used in areas occupied by children.

9.5 Finish Schedule

Table 9.1: Key to Finish Schedule

Floor		Walls and Wainscot		Case goods	
C	Carpet	PNT	Paint	Wood	Wood
SV	Sheet Vinyl	VWC	Vinyl Wall covering	PL	Plastic Laminate
SC	Sealed Concrete	CT	Ceramic Tile	MTL	Painted, Anodized, or Polished Metal
MAT	Recessed Walk-Off Mat				
RF	Protective Resilient Flooring				
Lin	Linoleum				
Base		Ceiling			
RB	Resilient Base	AM	Acoustical Material		
SV	Sheet Vinyl (integral cove)	GWB	Gypsum Wall Board		

Table 9.2: Example of Finishes for Child Care Centers

The following is a sample of a finish schedule for a child care center. In selecting the finishes for an actual project, the choice must reflect the situation and conditions on site. For instance, the existing underlayment will influence the choice. The following schedule is provided for guidance and to establish a baseline schedule. All paint should be easily washable, but oil based paint is not to be used.

Space	Floors					
	Matl.	Base	Walls	Wainscot	Ceiling	Casegoods
Vestibule	MAT	RB	VWC		AM	
Reception	CPT	RB	VWC	-	AM	
Main Circulation	SV/LIN	RB	PNT	VWC	AM	-
Director's Office	CPT	RB	PNT	-	AM	
Sick Bay	SV	RB	PNT		AM	-
Staff Lounge	CPT/SV/LIN	RB	PNT	-	AM	Wood/PL/LIN
Parent/Teacher Conference	CPT	RB	VWC	-	AM	Wood/PL/LIN
Adult Toilet	SV/LIN	SV	PNT	CT/VWC	GWB	Wood/PL/LIN
Central Storage	SV/LIN	RB	PNT	-	AM	PL/LIN
Laundry	SV/LIN	RB	PNT	-	AM	PL/LIN
Kitchen	SV/LIN	RB	PNT		GWB	MTL/PL/
Wood/ LIN						
Janitor's Closet	SV/LIN	RB	PNT	-	GWB	
Telephone Closet	SC	-	PNT	-	-	-
Multiple-Purpose Space						
Play Area	SV/RF	RB	PNT	VWC/ LIN	AM	
Meeting Area	CPT	RB	PNT	VWC/LIN	AM	
Play Yard Storage	SC	-	PNT	-	-	MTL
*Infant Activity Area	+CPT	RB	PNT	VWC/LIN	AM	Wood/PL/LIN
*Toddler Activity Area	CPT & SV/LIN	RB	PNT	VWC/LIN	AM	Wood/PL/LIN
*Pre-School Activity Area	CPT & SV/LIN	+RB	PNT	VWC/LIN	AM	Wood/PL/LIN
*School-Age Activity Area	CPT& SV/ LIN	+RB	PNT	VWC/LIN	AM	Wood/PL/LIN
Cubby Storage Area/Locker	SV/LIN	RB	PNT	VWC/LIN	AM	Wood/PL/LIN
Food Preparation	SV/LIN	RB	PNT	VWC/LIN	AM	Wood/PL/LIN
Eating/Table Area	SV/LIN	RB	PNT	VWC/LIN	AM	-
Children's Art Sink	SV/LIN	RB	PNT	VWC/LIN	AM	Wood/PL/LIN
Sleeping/Crib	CPT	RB	PNT	VWC/LIN	AM	-
Diapering Station	SV/LIN	RB	PNT	VWC/LIN	AM	PL/LIN
Children's Toilet	SV/LIN	SV	PNT	CT	AM	
Children's Handwashing Sink	SV/LIN	SV	PNT	CT	AM PL/LIN	
Children's Private Toilet	SV/LIN	SV	PNT	CT	AM PL/LIN	
Storage	SV/LIN	RB	PNT	-	GWB	

+Carpet tiles, which can be easily replaced work best

*Recommended finishes for each classroom include approximately 50-75 percent sheet vinyl floor covering. Permanently installed carpeting around toddler lofts and seating areas is desirable. However, a wider use of installed carpeting has been found to be difficult to clean and maintain. It also lowers the flexibility of the classroom. Non-slip throw rugs which come in a variety of shapes and colors have been found to be a better choice to alleviate the institutional appearance of a predominantly sheet vinyl floor finish. It is important that vinyl extend under areas of art sinks, sand and water play, tables for eating, painting and other "messy" activities — in other words, most of the classroom completely. Consider hazards and slipping problems when selecting and designing floor finishes. Wall finish may be washable paint above a vinyl wall covering wainscot.

Note: all PL counters should have a minimum 100 mm backsplash when they meet partitions.

¹ *Raising Children Toxic Free*, Needleman and Landrigan

CHAPTER 10:

TECHNICAL CRITERIA

This chapter provides criteria for the design and construction of elements and systems throughout the center, and discusses pertinent regulations.

10.1 Safety

Center design and location is of the utmost importance to safety. Safety is a fundamental planning consideration, involving security, design, agency and operations stakeholders. Child care centers shall comply with applicable requirements of the most recent edition of the *National Fire Protection Association (NFPA), Standard No. 101, Life Safety Code* as modified below:

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- the center itself, any fire event must be annunciated on the central building panel or a 24-hour manned security post. See most current editions of NFPA 72 Chapter 5 and UL
- egress) either along an outside wall with window access to the exterior, or along a courtyard with window access. Centers adjacent to a courtyard must have approved fire
- which are located on the floor above the level of exit egress, only pre-schoolers may be housed there. In no instance shall any portion of the center be located higher in the
- located below a level of egress unless the entire building is sprinklered and the arrangement is approved by both GSA and the local fire authority. All arrangements must ensure
- the outside. Each center must have at least two means of egress, which may exit via protected corridors, with the required fire separations. Each floor must allow access to
-
- dient of the adjacent occupancy. In no case shall the separation be less than a minimum of one-hour fire-resistant-rated wall with doors having a fire protection rating of not less than 20 minutes. A fire
- child care centers which meet the requirements of the NFPA Standards No. 70, NEC, NFPA 72
- ing Systems, NFPA 72E, Standard on Automatic Fire Detector.* The design must
- ments deemed the more stringent shall apply.

- Adjacent non-sprinklered hazardous areas (i.e., boiler room) shall be separated from the center by a minimum two-hour fire-resistant-rated wall with self-closing doors having a fire protection rating of not less than 90 minutes.
- Adjacent sprinklered hazardous areas (i.e., boiler room) shall be separated from the center by a minimum one-hour fire-resistant-rated wall with self closing doors having a fire protection rating of not less than 45 minutes.
- The center shall be protected by an approved supervised automatic system using quick-response sprinkler heads throughout. In areas such as multi-purpose rooms where there may be ball-throwing activities, for instance, the sprinklers should have guards around them.
- The sleeping and napping areas of the center shall be protected by an approved supervised smoke detection system. Smoke detectors are required in all areas of the center, especially in unoccupied areas including closets and closed space. This provision will enhance flexibility since it will allow the location of sleeping and napping areas which require smoke detection to be more easily changed in future.
- Dead end corridors shall not exceed 6095 mm (See Glossary in Chapter 1 of the Guide for an explanation of this term.) Travel distance within any room in the center to a door leading to a means of egress shall not exceed 15 000 mm, and travel distance from that point to an exit shall not exceed 30 000 mm.
- Any room greater than 92 900 square mm will require two remote exits that are located not less than half the diagonal of the room apart from each other.
- Test all existing painted surfaces in the interior of the center for lead-based paint following Department of Housing and Urban Development (HUD) guidelines. In addition, exterior paint in an area which the children may access must be tested. All lead-based paint detected must be abated using HUD procedures and re-tested to ensure compliance. Please refer to *Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing*, 1990 (HUD).
- Test all sources of water used by the center for lead at the acceptance of the substantially completed project (for new and major renovation projects which involve plumbing). In buildings over 25 years old, they should be tested annually at a minimum using guidance in the Environmental Protection Agency pamphlet *Lead in School's Drinking Water*, EPA 570/9-89-001, January 1989. If the lead levels exceed 20 parts per billion, the affected water supply must not be used and mitigation actions must be taken.

- Survey center (or area anticipated to house the center) for the presence of asbestos-containing materials. GSA's asbestos abatement and control program must be implemented if material is present. Asbestos-containing materials which are damaged or subject to disturbance will be abated in accordance with regulatory requirements and guidelines. In a limited area of the country, typically with highly acidic drinking water, it may also contain asbestos. While this is considered much less of a hazard than friable asbestos found in buildings, the drinking water supply should still be tested for the presence of asbestos and means taken to eliminate it as a hazard. (See Raising Children Toxic Free, referenced in the "Selected References" section of the Guide.)
- For a minimum of 90 days, test the center for radon in the air using alpha track detectors or electric ion chambers. If radon levels are at, or exceed, 4 picoCuries per liter, mitigation actions must be taken.. Allow a new center to "air out" before occupancy. The schedule of work should provide ventilation for off-gassing of new synthetic materials for 30 days.
- Test the center for radon in water if the drinking water used by the center is obtained from a non-public water source. Environmental Protection Agency guidelines shall be used for testing as prescribed in *Radon in Water Sampling Manual (EPA/EERF-Manual-78-1)*. If radon levels are at, or exceed, 300 picoCuries per liter, the affected water supply must not be used and mitigation actions must be taken followed by retesting.
- When screened operable windows are used, guards shall be installed to protect children from falling through screens.
- No sharp edges within children's areas. All corners on trim, counters, partitions, and shelving must have rounded edges with 13 mm minimum radius. In areas accessible to children, no openings between 88 mm and 229 mm to prevent head entrapment .
- Interior glass must not present a safety risk for children and must comply with code. Only glass which will not break in close proximity to children's activities or will not harm children or puncture skin when glass is broken shall be used.
- Locked storage for medications and dangerous products must be provided. Additionally, "childproof" interior hardware devices must be mounted on the interior of cabinets within children's reach.

10.2 Security

The purpose of designed security measures is to keep children safe within the center, to safeguard them from outside intruders, and to protect them from hazards to the fullest extent possible. GSA will define and provide the electronic security system for each center. Systems beyond those defined by GSA will be funded by the requester. Security systems provided will be those recommended by the FPS Risk Assessment process. Systems will include equipment, base electrical power, and conduit as required. All security alarm systems shall report to

an alarm system or to a central monitoring station as an audible and visual alarm signal (or both). Security system equipment may include, but is not limited to, perimeter security alarm systems, video surveillance for entrance doors and vestibules, and annunciation systems for main entrance doors. In addition, provide the following:

- When required, mount a video camera at the entry/egress doors. Video cameras are required when the center entrance is not visible by the building security staff, or if the security risk assessment prescribes video monitoring at the entrance.
- Annunciation at entry door.
- Electronic security system including alarms, cameras and hardware, mounted either by the Federal Protective Service (FPS), or Facility Guard Service within the building. Monitors should be at the director's office and the FPS law enforcement personnel if located off-site. In order to conform to the ADA requirement to lower mounting heights for fire pulls and duress alarms, while also minimizing children's access to them, these devices must be provided with covers.
- Keypad at entry door (with location and buttons sized appropriately for use by the disabled) for authorized entry to the center without relying on staff monitoring.
- All entry points shall be alarmed and shall include delayed, alarm locks at exit doors. Egress doors not intended for children's use should be equipped with electronic magnetic locks.
- Duress alarms as prescribed by the building's security risk assessment.
- Emergency alarm signals should be audible and visible, and should be monitored by the FPS.

10.2.1 Security Influences on Design:

- Additional safety issues impact the space planning of the center. Treat the perimeter of the building and play yards as a controlled filter with only one primary means of public access and egress. All other service and emergency egress points should be controlled, with access limited to authorized individuals.
- Design the entry approach to be visible by center staff who are inside. Position the reception area adjacent to the entry and director's office.
- Buildings with child care centers must have coverage by security personnel as consistent with the FPS Security Criteria for the specific site.
- The design must ensure that a child will be unable to leave the center without the knowledge of the staff. For instance, the designer must be sensitive to placement of operable windows in the vicinity of a public sidewalk, or the ability of children to open egress doors.

10.3 Sustainable Design

The term “embodied energy” describes the amount of energy needed to produce a specific building material. The embodied energy of all materials in a building, plus the energy needed to heat, cool, operate and light a building equals its total energy budget over its lifespan. To be consistent with GSA’s energy use reduction goals, the designer should choose materials with low embodied energy to lower the total energy budget and should reference the AIA Environmental Resource Guide (with Supplements) for guidance.

The designer’s material selection must show a clear intention of using products which will impact the environment and children’s health the least. While maintaining the established budget, the designer must also incorporate features and systems which will lower the use of energy in building operation. The designer should also specify materials whose use will cause the least impact upon the nation’s waste stream — materials that have high salvage value or can be reused when centers are renovated in future.

10.4 Accessibility

The site, as well as the building access to and within the center shall comply with the current publication of the *Uniform Federal Accessibility Standards* (UFAS) the final rules of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), and local accessibility codes, whichever is most stringent. At the time of this writing, complete accessibility standards for play yard design are under review by the Justice Department. When these mandatory standards are approved, the Regional Child Care Coordinator will have access to them. In the meantime, the designer should ensure that there is an accessible route to all ground level play events. The designer must check on the status of these evolving standards before starting design work on play yards. However, new Standards for Buildings and Facilities with scoping and technical requirements for accessibility to and within buildings with child care facilities were issued on January 13, 1998. The new Standards are available via the Internet at www.access-board.gov/rules/child.htm or from the Department of Justice.

10.4.2 Access to Outdoor Play Yards:

Circulation surfaces to play events in the play yards shall be suitable for wheelchairs to move across them.

10.5 Historic Preservation

If the center is housed in a building included or eligible for inclusion on the *National Register of Historical Places* (NRHP), or if the center or its playground is in visible, close proximity to such a building, the center design must retain, respond to, and respect the use and character of the historic structure(s).

The resolution or mitigation of any adverse effect on historic property shall be coordinated with the GSA Historic Preservation Officer, the State Historic Preservation Officer, and the

Advisory Council on Historic Preservation. This coordination must start early in the planning

Any GSA undertaking significantly affecting any building included or eligible for inclusion on the

tion Act of 1966, as amended. Work on historic buildings, structures, or properties should comply with the Secretary of the Interior's

Rehabilitating Historic Structures (current publication) and the

Historic Buildings (August 1989), jointly written by the Advisory Council on Historic Preser-

10.6 Acoustics

Three categories of acoustical concerns are: (1) Controlling exterior noise entering the space;

controlling the transfer of noise between tenants adjacent to the center.

10.6.1 Control of Exterior Noise:

airport flight paths, major highways, or busy rail lines. The RCCC must approve use of sites exposed to high noise levels. If proximity to high levels of noise is unavoidable, acoustical

the center is subjected to the noise and whether the sound is continuous or intermittent. Maximum acceptable noise levels at the center's exterior are as follows:

Outdoor play yards

Continuous: 70 dBA

Intermittent: 80 dBA

Continuous: 60 dBA

Intermittent: 65 dBA

Continuous: 65 dBA

Intermittent: 70 dBA

Under these circumstances, the following is recommended:

- All window and door glazing in this area is to be acoustically laminated glass with an STC rating of 35 to 45, having an air space of 50 mm to 100 mm. (Conventional double glazing
- rating of 30.
- Sound-rated doors are an acceptable but more costly solution.

10.6.2 Modulating Interior Noise Generated Within the Space:

In addition to standard commercial construction, two other requirements are necessary to ensure sound control within the center:

- Acoustical ceiling tile should be provided throughout a majority of the center spaces, (with exception of service areas).
- Carpet, either through the use of non-slip throw rugs or permanently installed, should be provided in appropriate spaces. Carpet may be particularly effective in corridors which can be particularly noisy due to the narrow configuration.
- Acoustical panels should be provided where appropriate.
- Baffles, banners, and fabrics should be considered in the design to help absorb the high level of sound generated within a center.

10.6.3 Controlling the Transfer of Noise Within Space:

Maintaining low noise levels in sleeping/napping and quiet areas is important. The following methods should be used:

- Extend interior partitions to the structure above the ceiling.
- Partitions may be single layer gypsum wall board but should have cavity insulation and should be completely caulked at the top and bottom of the partition.
- Doors opening onto noisy areas should be solid core.
- Use fabrics and baffles to absorb sound.
- Provide acoustical baffles in all ductwork which penetrates sound attenuating partitions.
- Avoid back-to-back electrical outlet boxes.

10.6.4 Controlling the Transfer of Sound to Adjoining Spaces Outside Center:

- Separation between child care centers and adjacent office space is recommended to be STC55. Note that this will involve a considerable expense since partitions need to be not only insulated but should continue to the structure above any suspended ceiling. Additionally, joints will require complete caulking.
- No door or window openings should be placed in walls adjoining other building tenants.
- Provide acoustical baffles in all ductwork which penetrates sound attenuating partitions.

10.7 Windows, Doors, and Hardware

10.7.1 Windows:

Natural light into the interior, visual access from the interior to the exterior of the building, and visual access within the center are all of particular importance in environments for children. Windows should be provided from classrooms to the outside, between classrooms, and from classrooms to circulation paths. Both children and adult caregivers must be considered in meeting these requirements. The height and scale of windows, type of glass, clear view (no horizontal members blocking view of either adults or children), control of light, the impact of the FPS Risk Assessment and safety factors must all be weighed.

The Designer should make every effort in the design to provide an exterior window for every classroom as a minimum. In the event that this cannot be effected and an interior space must be occupied by children, the design must still allow optimal *access* to light and view via clerestories, sidelights, windows and clear lite doors (with safety glass). Children's spaces must have a total window area of at least:

- 8 percent of the floor area of the room if windows face *south* directly to the outdoors. (Note: the area of south facing glass is less since the quality of south facing light is generally brighter.)
- 10 percent of the floor area of the room if windows face *east or west*.
- 15 percent of the floor area of the room if windows face north.
- 20 percent of the floor area of the room if windows are not on an exterior wall. These must be oriented to "capture" the maximum amount of natural light. Any exceptions to these percentages must be approved by the RCCC. Areas not requiring windows include toilets, kitchen areas, laundry, multipurpose, office, conference, lounge and storage rooms.

As directed by the Federal Protective service risk assessment, windows systems (glazing, frames, anchorage to supporting walls, etc.) on the exterior facades of child care centers must be designed to mitigate the hazard of glass fragments (or even whole panes) flying into occupied space following an explosive event at the exterior. To do this, the design must balance the features of the glazing, framing, and attachments with the capacity of the supporting structure to allow the system to develop its full resistive capacity. Coordination with FPS is paramount on this issue, as this feature may have a significant effect on the budget.

Horizontal window muntins (horizontal mullions) should not be located between 600 mm and 1100 mm above the finished floor because they could be used as climbing support.. Windows should be placed lower, at children's viewing height above the floor. Maximum window sill heights for children are 450 mm above the finished floor for infants; 600 mm above the finished floor for toddlers; and 750 mm above the finished floor for pre-school children. Ideally, sill heights should be lower than these heights, (although lower than 450mm above the floor is undesirable because furniture may be difficult to place in front of a window lower than a

450mm sill height may constrain room arrangement. For the same reason and for the likelihood of drafts, glass to the floor is undesirable.)

Windows and doors with glass lower than 915 mm above the finished floor must have safety guards or be constructed of safety-grade glass/polymer, and be equipped with a vision strip. Wire glass, if required, would best be replaced with an approved alternative, if cost permits. All glazing should be clear glass. Tinted glass is not recommended except when matching existing glazing, as in a renovation project.

10.7.2 Standards for Safety Glass:

- Consumer Product Safety Commission, 16 CFR, Part 1201, Safety Standard for Architectural Glazing.
- ANSI Z97.1, Safety Performance Specifications and Methods of Testing for Safety Glazing Materials Used in Buildings.

Depending on local code requirements, operable windows may be mandatory in order to provide for rescue and/or ventilation. All operable windows must have draft deflectors, screens, and safety locks, and be of a safety type to keep children from falling through. Exterior window glazing must be insulated glass. Interior windows need not be insulated, although interior spaces requiring acoustical separation may also employ laminated glazing.

Light control and energy conservation features are required on all exterior windows in children's areas, either by exterior or interior methods. In new construction, exterior overhangs or low E- type glass, or both should be included in many areas of the country because they may be highly cost effective over the life cycle of the building and may well justify a higher first cost, particularly on elevations with excessive heat gain. Overhangs are highly desirable but should be designed in a way that do not excessively restrict natural light, especially during winter months.

In addition, simple blinds, shades or draperies should also be used where required to control lighting and heat gain. Valances may also provide color, sound absorption and a non-institutional appearance. Allow the staff flexibility in modifying and changing window treatments. Exterior windows in napping/sleeping areas may require window treatments to control direct sunlight. Light levels in all rooms, including sleeping rooms, must be maintained at a sufficient level to provide visual observation of the space from adjoining spaces. All blind cords must be kept out of children's reach.

10.7.3 Doors:

Doors and openings are required to include the following:

- Vision panels are required at adult and child viewing height, except on doors to kindergarten, school-age or adult toilets.
- All clear opening widths of doors in paths of egress must be a minimum of 915 mm to allow for crib movement.

- Interior doors must swing in the direction of emergency egress. Exit doors must swing to the exterior. Avoid dutch doors. It is essential that children's fingers be protected from being crushed or otherwise injured in the hinge space of a swinging door. There are simple devices available which attach to the hinge side, ensuring that this type of injury does not occur. As the door closes, the hand is pushed out of the opening, away from harm. In addition, young children are vulnerable to injury when they fall against the other (hinged) side of doors and gates, striking projected hinges. Piano hinges are not recommended to alleviate this problem as they tend to sag over time with heavy use. Instead, an inexpensive device fitting over hinges is available on the market and should be used to ensure safety.
- Exit doors in child care centers require panic hardware. Unfortunately, this hardware is accessible to children. To moderate this obvious conflict, consider installing alarms on doors with delayed activation hardware that will only be used in emergencies and selecting the doors which will require the maximum amount of force to operate allowable by ADAAG and applicable codes.

10.7.4 Hardware:

All door hardware shall comply with UFAS. Lever-types appropriate for use by the disabled shall be provided for all door locks, latchsets and on the opposite side of the door leaf with panic hardware device. To prevent injury, all doors will have closers that restrict the rate of closure. Doors accessible to children must have hardware operable from both sides, with components having smooth edges and no sharp protrusions. Door openings intended for only adult use shall have hardware installed at adult height. Panic hardware shall be mounted as per code. All egress doors must be equipped with appropriate emergency hardware. Doors to the exterior that are not for children's use shall have electronic magnetic locks that will operate in an emergency. Main entrance doors shall have an electronic strike release with keypad or card reader and a remote release. Keypads and card readers must meet UFAS standards.

10.8 Plumbing

The following are requirements specific to child care centers:

- Provide paper towel and soap dispensers at all sinks (including art sinks). However, these should be residential types with no serrated edges.
- Provide easily reached clean-outs for waste piping.
- Provide a shut-off valve for each fixture so that maintenance procedures do not affect multiple plumbing facilities.
- Provide a floor drain in each children's toilet, laundry, and in each water play activity area.
- All hot water supplies accessible to children must have a controlled temperature not to exceed 431°C (105 degrees F). Provide a hot water supply to the dishwasher.

- Provide drinking fountains with a mouthguard and angled jet with a spout height of no more than 550 mm above the finished floor.
- Drinking fountains will be checked to ensure they are not contributing to high levels of lead or asbestos in water.
- Solder for domestic water piping shall be lead free.

(See the section on Accessibility for toilet and sink mounting heights.)

Table 10.1: Plumbing Connections

Space	Plumbing Connections
Water play, classroom	faucet and floor drain Sink (desirable)
Adult Toilet	Sink, toilet, floor drain
Laundry	Connections/drain/floor drain
Kitchen	Sink, disposal
Janitor's Closet	Mop sink
Pre-School Activity Area	Floor drain (@ water play) (desirable)
Food Preparation	Sink
Eating/Table Area	Drinking fountain
Children's Art Sink	Sink, drain (floor drain desirable)
Diapering Station	Sink, drain (floor drain desirable)*
Children's Toilet	Toilet, floor drain
Children's Handwashing Sink	Sink, drain (floor drain desirable)
Children's Private Toilet	Sink, toilet, drains (floor drain desirable)
Play Yard	Hose bibb for water play, drain, drinking fountain (optional, depending on center need)

*large

10.9 Heating/Ventilation/Air Conditioning

The comfort and safety of the children and adults within the center are of prime importance.

10.9.1 Temperature and Humidity Levels:

Temperature and humidity must be maintained within ranges stated below. Temperature levels are measured at lower than normal heights above the floor in order to accommodate children. Children spend a great deal of time on the floor, therefore both temperature control and avoidance of drafts are very important. Maximum insulation of floors (depending on the project location), including perimeter insulation of floor slabs is required. Heating systems installed *in* the floor slab are not recommended for GSA buildings due to the problems with maintenance and flexibility that they entail. The following recommended guidelines state acceptable temperature and humidity ranges (measured at 900 mm above the finished floor):

- Winter: 21 Degrees C; 35 percent minimum relative humidity.
- Summer: 24-26 Degrees C; 50 percent maximum relative humidity.

Tamper-proof thermostats are to be located at a maximum 900 mm above the finished floor to monitor the temperature at the child's level. The optimum temperature control is zoned and should be appropriately adjusted for different activity areas. For instance, infant areas may be more comfortable at a 1-3 degree warmer temperature than other areas. The design A/E needs to consider this issue and make recommendations for the optimal solution to heating and cooling distribution at the concept development stage. Thermostats should be accessible to the center director or other designated staff members.

10.9.2 Ventilation equipment:

In addition to heating and cooling equipment, a humidifier/dehumidifier may be needed to meet required levels. Each space shall be supplied with a minimum of 15 liters/second of outside air for each occupant in order to control odors. To ensure comfort levels, the air motion in the occupied space shall not exceed 8000 mm per minute. A minimum of 15 liters/second of outdoor air per each occupant must be provided and none of this air is to be returned to the rest of the building. Provide proper exhaust venting for range and clothes dryer. Consider noise level, service, and efficiency when locating equipment. Whenever possible, provide HVAC separate from the other building systems. Apart from other advantages, this will facilitate better filtration of the dust and molds to which many children are particularly sensitive. Air diffusers should minimize drafts on children.

10.9.3 Safety Issues:

The following restrictions apply in child care centers:

- Portable electric fans are prohibited.
- Space heaters are prohibited.

- Heating units that utilize flame must be vented properly to the outside and shall be supplied with sufficient combustion air.
- Heating units hotter than 43 °C shall be made inaccessible to children by the use of barriers such as guards or locks.

10.10 Lighting

Well-considered lighting for each activity area is a key element in creating the “home-like” environment which is a goal of the Program. The quality of light should remind children of a residential environment. Broad ambient lighting is most appropriate for large motor activity spaces; task lighting is required for manipulative activities; lower light levels are needed for quiet and sleeping areas. The amount and orientation of natural light needs to be considered in the design and variation in light levels up to a maximum of 500 lx will be acceptable in rooms with poor natural lighting capability. See the table for the minimum light levels for various functions. In addition the following should be provided :

- 500 lx on children’s work surface for reading and close work.
- 250 lx ambient light for class and play areas. (additional task lighting up to 500 lx provided where appropriate.)
- Capability of being dimmed in a range of 500 lx to 50 lx for sleeping and napping areas.
- 100 lx in stairs and corridors.
- Light fixtures in classrooms and nap rooms are to be dimmable.

Light levels in all rooms, including sleeping rooms, must be maintained at a sufficient level to provide visual observation of the space from adjoining spaces. Lighting should be utilized to emphasize areas, designate boundaries, create a particular feeling, or cause a desired response.

When using fluorescent lighting, utilize electronic ballast light fixtures. Their high frequency cycles avoid perceptible flickering and allows dimming. Fluorescent lamps are to have a color temperature of 4100 degrees Kelvin with the highest possible color rendering index (CRI). Minimum CRI is to be 80 or greater. This is of paramount importance to the center’s environmental quality. If there is adequate ceiling height, the better quality of reflected, ambient lighting from pendants or recesses is strongly preferred to troffer-style downlight fluorescent fixtures.

With reflected light, children, who are at a far lower vantage point than adults will not look directly into the light source, a condition which causes glare and eye fatigue. If troffer use is unavoidable, a specular finish, parabolic louver is recommended. Provide dimmable lighting in infant sleep areas and in all the classrooms. Task lights such as those provided by residential type pendant fixtures should be used for reading, painting and close work. Design for variety

in lighting, through such devices as dimming controls, separate switching, adjustable directed specialized lighting to display art work, pools of light to create excitement and variety, and high levels of light to encourage physical activity. Provide food preparation areas with fixtures

Exterior light can be controlled with adjustable blinds, shades, or other types of window coverings. Window treatments on interior windows must allow for clear visibility.

rity.

All lamps must have shatterproof lenses or covers.

Space	Natural Light	
Vestibule	View	250-350
Reception	View	250-350
Main Circulation		100 - 350
Director's Office	View	500
Sick Bay		300 - 500 (Dimmable)
Staff Lounge	view	500 (Dimmable)
Parent/Teacher Conference		500 (Dimmable)
Adult Toilet		150-250
Central Storage		250-350
Laundry		300 - 400
Kitchen		300 - 500
Janitor's Closet		300 - 400
Telephone Closet		400 - 500
Multiple-Purpose Space		
Play Area		300 - 500
Meeting Area		300 - 500 (Dimmable)
Play Yard Storage		300 - 500
Infant Activity Area	Natural light	250-500 (Quiet areas dimmable)
Toddler Activity Area	Natural light	300-1000 (Quiet areas dimmable)
Pre-Schooler Activity Area	Natural light	300-1000 (Quiet areas dimmable)
School-Age Activity Area	Natural light	300-1000 (Quiet areas dimmable)
Cubby Storage Area/Locker		300 - 500
Food Preparation		300 - 500
Eating	Natural light	300 - 500
Children's Art Sink	Natural light	500 - 1000 (Dimmable)
Sleeping/Crib/Napping		50 - 500 (Dimmable)
Diapering Station		300 - 500
Children's Toilet		300 - 500
Children's Handwashing Sink		300 - 500
Children's Private Toilet		300 - 500

10.11 Electrical

Safety of the children and expansion of future electrical needs must be considerations. All data, equipment and communication requirements must be defined in advance to prevent inadequate facilities. Consult with GSA and center staff when defining needs.

10.11.1 Safety Issues:

If other applicable codes and standards are deemed more stringent than the requirements below, the most stringent requirements will apply:

- Outlets in areas accessible to children must be tamper resistant as defined by NEC Article 517-18c. The intent is to “child-proof” outlets that are within children’s reach to avoid any possibility of electrocution. An alternative is to locate them out of the child’s reach (at least 1380 mm above floor level).
- No electrical outlet shall be located within 1900 mm of a water source unless protected by an approved ground fault circuit interrupter.
- Encase computer cables in conduits or channels.
- There shall be no cables or wires in the center with enough “slack” to present a possibility of strangulation should a child become entangled in them.
- Locate tamper-proof outlets 1100 mm above the finished floor where counters are provided for adult use (at kitchen areas or work counters) and computer stations.
- No raised electrical boxes with sharp metal edges are to be used in areas or passageways used by children.
- All hot pieces of equipment including resistance heating elements shall be screened from children’s access.

Care must be taken in selecting and locating telephone sets and other devices so that a child may not be subject to strangulation or other injury if he or she were to become entangled in the device’s wires and cord. The same is true of window blinds with pull cords. Such wires, cords and string must be above 1372 mm, out of children’s reach.

10.11.2 Requirements:

- Provide wall duplex outlets at approximately 4000 mm on center.
- Provide one duplex outlet per wall on walls less than 3000 mm.
- Provide electrical power outlets for kitchen and laundry areas for refrigerator, oven, range, garbage disposal and washer/dryer unit as required.

- Install closed circuit TV camera(s) at each entrance/exit as determined by the GSA security risk analysis.
- Provide for a possible additional monitor location in the staff area.
- Coordinate requirements and provide for installation of the following: Electrically switched doors, security alarm, and intercom systems.
- Provide power supply as prescribed in the latest edition of PBS-PQ100.1a for TV, VCR, AV equipment, telephones, and computers for staff and children's areas.
- Provide smoke detectors in each closet or enclosed space.
- In the meantime, the designer should use the supplementary recommendations to the UFAS specifically addressing the special needs of disabled children. The following information is summarized from *Recommendations for Accessibility Standards for Children's Environments*, January, 1992, prepared for The Architectural and Transportation Barriers Compliance Board. Please refer to this publication for more in-depth information. (These requirements address needs of disabled children through age 12.)
- Passage width: The minimum clear width of aisles and corridors for children's wheelchairs is 915 mm; with passing space of 1525 mm provided at least every 60 960 mm.
- Minimum door width: 825 mm with a 1525 mm deep landing area in front of all ramps, gates and doors. All doors through which evacuation cribs would have to pass to access an exit, the minimum door width is 915 mm.
- Forward and side reach: Maximum high reach is 900 mm; minimum low reach is 500 mm.
- Maximum slope and rise: 1:16 to 1:20 is preferred if space is available; the maximum is 1:12.
- Curbs must have cuts that comply with UFAS requirements.
- Drinking fountain controls: Front or side operable; spout should be a maximum of 750 mm above the finished floor. Knee clearance space should be 400 mm above the finished floor; 455 mm deep and 760 mm wide.
- Children's toilet: Provide one side and grab bar in the children's toilet area (at a minimum, provide one of each in an accessible location): Follow the most recent requirements established by ADAAG.

Additional items:

- Flush controls should be mounted 500 mm to 750 mm above the finished floor on the wide side of toilet areas.
- Toilet paper dispensers should be mounted 350 mm above the finished floor within children's reach.
- The sink top should measure 550 mm above the finished floor with a minimum 475 mm clearance for knee space.
- Faucet on children's lavatories may be fitted with sanitary and energy conserving automatic controls, but the designer must ensure that these devices will be acceptable to local licensing before specifying them. Faucet controls mounted on the face or rim of counter surface should be no greater than 355 mm from the leading edge.
- Mirrors must be mounted over the sink with the bottom edge no higher than 750 mm above the finished floor. Provide one full-length mirror with the bottom edge a maximum of 450 mm above the finished floor. All mirrors are to be shatter-proof.
- Paper towel dispensers should be mounted beside or in close proximity to the sinks. No dispensers of any kind should have serrated edges if they are within children's reach.

APPENDIX A

Metric/English Conversions

The list below is not an exhaustive listing of Metric to English conversions, but those commonly used in the Guide.

Unit of length

25.4 millimeters = 1 inch

1 meter = 3 feet, 3 3/8 inches

Units of Area

1 square meter = 10.76 square feet

Units of Weight

1 kilogram = 2.2 pounds

Units of Illumination

10 lux = 1 foot candle

Units of Volume

1 cubic meter = 35.3 cubic feet

Units of Temperature

Celsius Temperature = Fahrenheit degree - 32 x 5/9

APPENDIX B

POISONOUS PLANTS

Many popular house and garden plants are considered poisonous and can produce symptoms ranging from minor to severe. This list is not exhaustive, but gives a listing of some of the most popular plantings which are known to be poisonous, as well as non-poisonous selections. The list is provided by the Maryland Poison Center. Check with local extensions of the US Department of Agriculture for more information about the nature of common plantings in specific locations:

Amaryllis	Jerusalem cherry
Azalea	Jimsonweed
Barberry	Jonquil
Black locust	Lily-of-the valley
Boxwood	Mistletoe
Caladium	Mountain laurel
Castor bean	Narcissus
Chinaberry	Nephthytis/Arrowhead
Chinese evergreen	Nightshade family
Chrysanthemum	Oak (acorns)
Crown of thorns	Peony
Daffodil	Philodendron family
Dumbcane/Dieffenbachia	Poison ivy/oak/sumac
English ivy	Pokeweed
Euonymous	Privet
Four o'clock	Rhododendron
Fruit pits or seeds	Snowball bush/Hydrangea
Gladiola	Water hemlock
Holly	Wisteria
Hyacinth	Yew
Iris	

COMMON NONPOISONOUS PLANTS

No evidence currently exists that these plants are poisonous.

African violet	Marigold
Christmas cactus	Mulberry (ripe berries only)
Coleus	Norfolk pine tree
Corn plant	Peperomia
Crocus (spring)	Petunia
Dandelion	Poinsettia*
Dogwood	Prayer plant
Dracaena	Pyracantha/Firethorn
Easter lily	Rose
Ferns	Rubber tree plant
Ficus*	Sansevieria/Snake plant
Forsythia	Scheffiera*
Fuchsia	Spider plant
Geranium	Swedish Ivy
Hibiscus	Tulip*
Honeysuckle	Wandering Jew
Impatiens	Wax plant
Jade plant	Wild strawberry/Snakeberry
Lilac	Zebra plant

***Sap may be irritating**

APPENDIX C

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APPENDIX C

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